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# ST. GEORGE'S HOSPITAL

# REPORTS.

EDITED BY

JOHN W. OGLE, M.D. F.R.C.P.

AND

TIMOTHY HOLMES, F.R.C.S.

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# ST. GEORGE'S HOSPITAL REPORTS.

## I. CONTRIBUTIONS TO THE SURGERY OF THE HEAD.

### No. II.

### ON EXOSTOSES OF THE SKULL.*

THE exostoses, properly so called, of the skull are ivory-like, or cancellous. The "ivory exostosis," by far the more common of the two, belongs almost exclusively to the cranial region, being seldom found in any other part of the body, save in some of the bones of the face. The "ivory exostosis" is made to include bony tumours varying in hardness and in density. Of these bony tumours some are truly ivory-like, and this throughout their whole structure; but many are simply like the compact tissue of the bone with which they happen to be connected; and others, although exceedingly hard, present a structure more or less finely porous; and others again are of a mixed character, ivory-like and porous, in different proportions. The "cancellous exostosis," although seldom referred to in the cranial region, nevertheless exists, and is as well marked here as elsewhere. Of this form of cranial exostosis there is a good specimen belonging to the College Museum (3215). And in the Museum of St. Bartholomew's Hospital there is another specimen equally well marked (Series i. 71). Both these specimens are, it is true,

* A paper on the Watery Tumours of the Head ought, naturally, to have followed the last contribution; but, from unavoidable circumstances, it has, for the present, been postponed, and this one "On Exostoses of the Skull" has been substituted.

classed by Mr. Paget among the ivory-like exostoses; but their characters belong rather to the cancellous exostosis, the bulk of the tumour being, in both instances, made up of cancellous tissue encased by a layer of compact tissue. And in the Musée Dupuytren (Mal. du Syst. Osseux, No. 371) there is another specimen of the same kind, in which two symmetrical exostoses, of the size of walnuts, and on the inner side of the frontal, consist of cancellous tissue, resembling the diploë, and covered over by a thin layer of compact tissue. The specimen in Guy's Museum (Bones, 1074[35]) is so precisely similar in its outward configuration to the specimen just referred to in St. Bartholomew's, that in all probability it, too, is a cancellous exostosis. It is described as an ivory exostosis, but no section has been made of the tumour.

The ivory and the cancellous exostosis of the skull differ, moreover, in colour. The colour of an ivory exostosis is white, or yellowish-white, contrasting strongly with that of the bone by which it is surrounded. Most commonly the colour is precisely that of ivory; but I have seen it quite white, and more like the well-known porcelainous bony deposit. On the other hand, the colour of the compact covering of the cancellous exostosis resembles that of the bone with which it is connected, and so much so that it cannot be distinguished from it.

Cranial exostoses vary very much in their shape. Some are round and perfectly smooth. Others, cone-like, are rough, and long and tapering. Of this there was a well-marked case some years back in St. George's Hospital. The tumour was a large one, broad at its base, and tapering; it was between two and three inches in length, and looked like a horn growing from the head. And others again, cauliflower-like, are irregularly nodulated, and sprout out in various directions.

Some of these exostoses have a broad base; others, a pedicle, the thickness of which it may, at first sight, be difficult to determine, as it not unfrequently happens that the neck is very short, and covered over by nodules of bone overlapping it on all sides. I have seen an exostosis of the skull which appeared to have a base of the size of a half-crown piece, and which, in reality, presented a narrow neck,

the width of which was only made apparent by a perpendicular section of the growth. The neck in this instance was so short, and covered in by such a width of overlapping bone, that it was difficult to get even a thin sheet of paper between the original bone and the new growth.

The size of a cranial exostosis, and especially that of the ivory exostosis, rarely exceeds, it is said, that of a common marble. Such is the teaching of our best authors; but further experience will, I believe, prove that the growth of these tumours is by no means thus limited. St. George's possesses four specimens, the least of which is as big as a walnut; Guy's, one of the size of a pigeon's egg; St. Bartholomew's, one as big as a pear. Dupuytren's Museum has a skull with two exostoses, one as large as an egg, and the other of the size of an orange. In Mr. Ilott's specimen the exostosis measured two and a half inches in diameter and three in length. One of the size of a walnut, and another of the size of an egg, are mentioned in the *Compendium de Chirurgie*. In Bruns's case the growth measured three-quarters of an inch in height, and one inch and a half in diameter; in Regnoli's it was as large as a hen's egg; in Massey's it was three inches long and one inch and a half wide; and one measuring four inches in circumference, and another as big as a small melon, fell under the notice of J. L. Petit. Lastly, many exostoses of the frontal sinuses, we shall find, have come to a very large, and some to an enormous, size.

The ivory exostosis is, in the vast majority of cases, simply an outgrowth from the bone. Even when of the smallest size, not larger than a pin's head, and perceptible only by its ivory-like colour and structure, I have found this exostosis incorporated with, and forming part and parcel of, the original bone. And such, too, were the results of Rokitansky's extensive researches. But it would appear, in rare instances, that an ivory exostosis may arise independently of the bone, to the surface of which it afterwards becomes more or less extensively connected. At least such, I think, is the only explanation which can be offered of what occurred in Mr. Jonathan Toogood's case. The exostosis, as big as a pear, was lying on the outer surface of the mastoid region. It was thought to be slightly movable, and an attempt to

get it away was therefore determined upon. On proceeding with the operation, Mr. Toogood found the tumour closely bound down by the pericranium. At length, after considerable difficulty, a strong spatula was planted between the skull and the growth; at this moment the woman made a desperate effort to get away, and in the struggle the tumour was suddenly wrenched from its attachment. The skull under the tumour was smooth, except at the mastoid process, which was rough, and appeared to be diseased.

It is evident that it would have been impossible to have thus torn away a large, broad-based ivory exostosis springing from the bone. And moreover, the tumour, now in the Museum of St. Bartholomew's, presents in no part of its surface anything like a fracture. One part of it is rough and mammillated, and by this, in all probability, it had got partially imbedded in, and connected with, the mastoid process. And here it may be mentioned that an ivory exostosis, very similar in size and in shape, was removed from the antrum by M. Michon. The growth was simply imbedded in the sinus, with the bones of which it had contracted some very firm attachments; but these at length yielded to long-continued and desperate efforts. And such, too, appear to have been the connections of some of the ivory exostoses developed in the frontal sinuses.

The cancellous exostosis, it is evident, may simply be engrafted upon the bone. The compact table, unchanged, lies under the cancellous tissue. This is well shown in the section of a cancellous exostosis in the Musée Dupuytren. The line of the inner plate may be distinctly traced between the diploë and the cancellous tissue of the exostosis, which is inside the cranium. And I have also found appearances precisely similar in other cancellous exostoses which I have examined on the inner side of the frontal. But the compact plate of bone under the cancellous exostosis may disappear, and so complete may be the adaptation of the cancellous and compact tissues of the original and of the new bone, that the exostosis presents all the appearance of having sprung from the diploë. And difficult would it be to say that this has not been the case in the specimen 3215 in the College Museum, and in that marked Series i. 75 in St. Bartholomew's.

Cranial exostoses may exist singly, or there may be several such; and these may be scattered over various parts, or clustered together on one bone more or less closely—so closely in some cases as to run into each other at their bases. If of large size, there is generally but one exostosis; when there are several, they are for the most part small. In the College Museum there is a skull with numerous exostoses; and in St. George's there is another, on the calvaria of which I have counted no less than nineteen exostoses scattered over various parts. One of these exostoses is of large size, as big as a walnut; the others are all small, of the size of split peas, of millet-seeds, and some are not larger than pin-points. These exostoses may be perfectly symmetrical.

The surface of the bone in the neighbourhood of an exostosis presents traces, more or less evident, of increased vascularity; and so much may this be the case that, if examined with a magnifying-glass, the whole bone around is seen to be drilled with minute holes, and perfectly porous, contrasting all the more strongly with the dense ivory-like appearance of the new structure. Of this there is a well-marked example in the College Museum; and one still better marked exists in St. George's Museum. In this case, that in which there are nineteen exostoses, the whole of the outer surface of the calvaria is pierced with numberless minute holes, distinctly visible even to the naked eye. On the inner side the arterial furrows of the middle meningeal artery may be enormously increased in number, in size, and in depth. In cases where there is a large exostosis on one of the parietals, the whole of the inner surface may be seen covered with an intricate network of arterial furrows, varying in size and in depth. Of such, several specimens may be found both in the College and in the other metropolitan museums.

The osseous tissue may also present more or less evident traces of general hypertrophy. This may be limited to the immediate neighbourhood of the exostosis, or the whole bone may be implicated. In such cases the hypertrophied bone may be much harder and much denser than usual; as hard and as dense as ivory. It not unfrequently happens that the whole skull is thus affected, and the sutures obliterated. On the other hand, we may have large exostoses and a very thin

skull. In the Museum of St. Thomas's Hospital there is a skull with several exostoses, some of large size, in which the intervening bone-tissue is throughout remarkably thin.

An exostosis involving a suture for the most part solders the bones together; but I have seen a large ivory exostosis in which the serrated edges of the suture, largely developed, remained perfectly distinct, so that the portions of the exostosis belonging to the two bones could be separated from each other.

Exostoses may be limited to the outer or to the inner plate of the cranial bones; they may originate, too, in the diploë, and in the sinuses and cells belonging to the frontal, the ethmoid, and the sphenoid.

On the outer side of the skull exostoses occur by far most frequently on the frontal bone. Indeed this bone alone has presented more cases of exostosis than all the other bones of the skull put together. And even upon the frontal these growths exist most frequently at one part, in the neighbourhood of its orbitar portion. Of the hardest kind, irregular and cauliflower-like in shape, these exostoses sometimes attain to a large size, and form unsightly masses projecting from the brow, or pressing into the orbit, and driving the eye out of its socket. Next in order, it would appear, is the temporal bone. J. L. Petit describes an exostosis of the size of a small melon, which was so strictly limited to the outer surface of the squamous portion of the temporal, that the inner surface of the bone presented a perfectly natural appearance. But most exostoses of the temporal have been found in its mastoid portion, and of these there are already several cases on record. In the museum of St. George's Hospital there is one of the size of a mandarin orange, which was removed from this region by Sir Benjamin Brodie. The spinous process of the occipital sometimes also presents an outgrowth, exostosis-like, which may attain to a largish size. Of this I have seen several examples. And in St. Bartholomew's and in Guy's Museums there are two exostoses, curiously alike, situated along the mesial line, and immediately behind the occipital foramen.

In general characters the internal exostosis of the skull presents pretty much the same features as the external one. Its surface is, however, more commonly irregular; even when

of small size it is nodulated and more or less deeply fissured. Frequently the internal exostosis presents itself as a long slender spiculum projecting far into the skull. The most common situation of an internal exostosis is on the calvaria, and especially in the frontal region; but the bones of the base not unfrequently present such outgrowths. An exostosis of the size of a walnut has been observed on the crista-galli (*Compendium de Chirurgie*, ii. 715), and another as big as an egg in one of the cerebellar fossæ (*Id.*, ii. 716). I have several times seen the crista-galli and the clinoid processes largely developed, and ivory-like in structure. The outgrowth of bone so commonly met with in advancing years on the sides of the sella turcica, and described by some anatomists as the middle clinoid process, is an exostosis. And curious are the appearances produced by this exostosis, should its growth happen to coincide with an increase in the size of the anterior and posterior clinoid processes. These various parts may meet and ultimately unite, and thus are formed the rings of bone not uncommonly met with in this region. Similar outgrowths, minute exostoses in the shape of slips of bone, also frequently exist in the posterior lacerated and in the anterior condyloid foramina, more or less completely subdividing these holes. And the surfaces of the petrous bone frequently, too, present small irregular exostoses of peculiar hardness.

But of all the internal exostoses, the most common is, I think, the mammillated exostosis of the frontal.

Many of the cranial exostoses spring, I believe, from the diploë, and, projecting either outwards or inwards, are taken for exostoses of the compact tables, with which they appear to be connected by a broad base. Such are some of the exostoses described as presenting the appearance of a bisected nut, or that of biconvex lenses resting with one convex surface on the skull. But the true origin of this exostosis is at once shown by a section of the bone, in the diploë of which the deeper part of the growth is found imbedded. This is well shown in a preparation in St. George's Museum. In making a section of an ivory exostosis of the size of a filbert, I found part of it dipping into the diploë, but the greater part projects beyond the level of the skull, as a prominent, round, smooth tumour. In its general features, this exostosis strongly resembles seve-

ral other cranial exostoses which I have examined in some of the London museums. It resembles, too, the representation (in Mr. Miller's *Principles of Surgery*, p. 476) of exostoses clustered together on the surface of the skull. Sections of these exostoses would, in all probability, have shown that they too sprang from the diploë. The exostosis of the diploë—and this is a matter of great practical importance—may project on the outer and on the inner surfaces of the skull at the same time. Of this there is a beautiful specimen in the Musée Dupuytren (Mal. du Syst. Osseux, No. 374). On this skull there are two large exostoses: one, of the size of an orange, belongs to the frontal; and the other, of the size of an egg, to the parietals. In both, one half of the exostosis projects on the outer, and the other half on the inner side of the skull. A section of these growths shows, and especially on the frontal one, an outer and an inner layer of hard, compact tissue, looking as if the tables of the bone still capped the surfaces of these gigantic exostoses. The tumours themselves are made up of hard ivory-like bone mixed with cancellous tissue, the latter predominating largely in the parietal exostosis. The bones around on both surfaces are drilled with numberless minute holes, the result of largely increased vascularity; and on the inner surface may be traced arterial grooves greatly increased in number, in depth, and in size; the trunk-grooves of the middle meningeal arteries are remarkably large.

As to the exostoses of the sinuses, or cells of the cranial bones, most of them have been found in the frontal sinuses; and of these there are already several valuable specimens in different museums. One of the most remarkable is in the College Museum (795). It belonged to, and was much prized by, Hunter, and is, moreover, celebrated as having been figured or described by Baillie, Sir E. Home, and Mr. Paget. St. Bartholomew's, St. Thomas's, the Cambridge University, and the Val de Grâce Museums each possess a specimen; and there are two in the Musée Dupuytren, in one of which the exostosis, supposed to have belonged more properly to the ethmoidal cells, was successfully removed by M. Maisonneuve. From these various specimens, the following points may be clearly made out. Such exostoses belong to the largest, the

hardest, and the most irregular-shaped bony tumours of the cranial region. Their size may be enormous. That in the Cambridge Museum, as represented by Mr. Paget, is bigger than the skull itself. They are, for the most part, truly "ivory exostoses;" but they are sometimes partly cancellous also. The Hunterian specimen is as hard as ivory in the whole of the front part; but towards the middle and back part it is composed of very fine cancellous tissue. And as to shape they are most irregular; creeping into every nook and cranny of the sinuses, distending and ultimately destroying their walls, these exostoses may run in any and every direction, projecting as large, deeply-lobed, tuberous masses in the forehead, in the skull, the orbits, and the nose.

But it is into the skull and orbits that such exostoses most frequently push their way. In five out of the seven specimens above alluded to, the exostosis projected more or less prominently into the skull; and in six it was found in the orbits, where, having displaced the eye-ball, it could be more or less distinctly felt. In two specimens it was found on the forehead, where, having destroyed the greater part of the anterior wall of the frontal sinus, it formed a prominent tumour, in one of the size of an apple. And especially must it be noted that in every case in which the bony tumour had made its way outwards, it had at the same time made its way into the skull.

In their earlier stages, or when of small size, there is no difficulty in assigning their proper point of origin to these exostoses; but when largely developed, and with the osseous boundaries broken down and burst through, it is a difficult matter to determine the exact place from whence these growths sprang; and this can only be done by tracing out, as it were step by step, the course and progress of such tumours in various specimens.

These tumours, even when of large size, often have but a very small pedicle; and sometimes even they have no connection with the surrounding bones save that of contact. In a specimen presented to the Société Anatomique de Paris, by M. Weiss, M. Cruveilhier could make out no bony union between the exostosis and the walls of the frontal sinus.

What is the mode of origin of these exostoses? In his extensive researches on the diseases of the maxillary sinus, M. Giraldès frequently found pearl-like bodies of ivory hardness —minute exostoses—which appeared to him to have begun in the Schneiderian membrane, or in the periosteal lining of the sinuses. But may not these exostoses also owe their origin to simple outgrowths of bone? and may they not sometimes, also, owe their origin to the ossification of an enchondromatous tumour developed in the sinus? There is no doubt that some of these exostoses present, when fully developed, the exact counterpart, in shape and outward configuration, of a cartilaginous tumour. The resemblance between the cartilaginous and some of the hard ivory tumours has not escaped Mr. Paget. And then, again, these exostoses also resemble the cranial cartilaginous tumours in growing in every direction. I have seen an enormous cartilaginous tumour developed in the bones on the outer surface of the base of the skull, and which had pressed both into the skull and into the orbits, doing exactly as these exostoses do.

Some of the lower animals, and especially the ox tribe, are liable to the development of ivory exostoses from the forehead. Such tumours grow to a very large size in the ox, in which animal they were known to exist long before they had been noted in man. In the College Museum there is an enormous ivory exostosis which grew from the forehead of a cow, and originated, no doubt, in the frontal sinuses. It weighed no less than sixteen pounds, and measures, in its greatest diameter, eight and a half inches. It is a most perfect specimen of the true ivory exostosis. For years one half of the tumour was classed among the specimens of ivory in the Museum, and was thought to have grown from the tusk of an elephant. At length the other half was found by Mr. Quekett, and with it the label, stating that the tumour, presented by Sir Joseph Banks, had grown from the head of a cow. Microscopically examined, it proved to be good and true bone.

But the most curious part of the history of these cranial exostoses in the ox tribe belongs to the singular error to which they have given rise.

They have been taken for "petrified brains," and de-

scribed as such by men of great repute, whose names stand deservedly high in the annals of science.

The first case of "petrified brain" was made known two hundred years ago by Thomas Bartholinus, and from that time various other cases have been published. The most circumstantially detailed is the case by the younger Du Verney, who brought the subject before the Académie Royale des Sciences; and was so thoroughly possessed with the idea that he was dealing with a "petrified brain," that in the lobes, knobs, and irregular ridgy surface of an ivory exostosis he saw the hemispheres and convolutions of the brain, the pineal gland, and the vermiform process. The outer surface of the College specimen presents in parts somewhat of a rough resemblance to the lobes and convolutions of the cerebrum; and at one part of its circumference the section of the growth also presents an appearance of a separate layer, about a line in thickness, surrounding the rest of the mass. This appearance of a separate layer existed in one part of Du Verney's preparation, and in this "he distinctly recognised the gray and the white matter, all-petrified though they were."

To Vallisnieri is due the credit of having been the first who endeavoured to prove that these concretions were not petrified brains, but simply hard bony tumours. Others followed in Vallisnieri's steps; and yet, notwithstanding all this, an elaborate description of a "petrified brain" was put forth only a few years back by Professor Patellani, of Milan. But this, it is to be hoped, is the last of the "petrified brains."

It is needless to give here an account of the animals in whose skulls these exostoses were found; their habits differed in nothing from those of others of their species, notwithstanding their "petrified brains." The history of several of the cases is to be found in Vallisnieri's valuable memoir, to which are added accurate drawings of the then-known specimens of "petrified brains." But it is in M. Arm. Goubaux's most able memoir that the clearest proofs are to be found of the "petrified brain" being an "ivory exostosis" of the frontal sinuses, which, following the course we have already seen in the human subject, breaks down the wall of the frontal sinus, and projects into the brain-case. Such is the whole mystery of the "petrified brain."

The progress of a cranial exostosis is in general very slow; so slow, that its increase may be scarcely perceptible for years together; its increase may even be cut short at a very early period, and the tumour remain stationary altogether, or subsequently take to growing again. But occasionally the growth of an ivory exostosis is more rapid. J. L. Petit's ivory exostosis, measuring four inches in circumference, had been growing for seven years at the time of the patient's death. And the existence of Sir William Lawrence's ivory exostosis, which filled the frontal sinus, and projected into the orbit and skull, had only been known for three years. Sometimes, after attaining a large size, an ivory exostosis dies in part, or altogether, and is separated from its connections as an irregular mass of necrosed bone. In Mr. Ilott's specimen of a large horn-like exostosis of the skull, the apex was covered with a thin, hard, black layer—a portion of bone in a state of exfoliation. I know of no case in which an exostosis has spontaneously sloughed away bodily from the skull; but that which has happened with exostoses of the maxillary sinus might, no doubt, also happen with the sinuses and bones of the cranial region. In Mr. Hilton's case, a large necrosed ivory exostosis, weighing fourteen ounces, separated spontaneously from the antrum. The preparation is in Guy's Museum. And pretty much the same occurred in a case of Mr. Stanley's, and in all probability in another case, both of which are mentioned by Mr. Paget. In these cases it may, perhaps, have been as Mr. Stanley thinks, that the exostosis was not actually an outgrowth of bone. It may have been one of those exostoses originally developed in the sinus, independently of the bones; and the attachments which it had subsequently contracted having been destroyed by suppuration in the parts around, the tumour gradually became loosened, and at last separated. Such a process of separation may extend over years. In Mr. Hilton's case, the necrosed bone was more than seven years before it came away.

To what cause is the occurrence of exostoses on the cranium to be attributed? In some cases there is every reason to believe that these growths owed their origin to an injury, and more especially to a blow; but in other cases they made their appearance without any appreciable cause. Some sur-

geons, and especially the continental ones, refer the cranial exostosis to a constitutional taint—the syphilitic for the most part; but this point of the history of these hard bony tumours requires, it must be confessed, further elucidation.

Situated on the outer surface of the skull, an exostosis may give rise to no inconvenience, save that of deformity; and this may be but very slight, as the cranial exostosis very frequently remains of diminutive size for years. But now and then such a tumour becomes a matter of serious inconvenience by its growth, and more especially by its situation; so much so, that the patients get clamorous for its removal. And should the exostosis chance to lie in the supra-orbital region, one of its chosen seats, it may lead to disastrous results, —projecting into the orbit, and driving the eye out of its socket.

Among the diseases to which an internal exostosis is liable to give rise, may be especially mentioned epilepsy; and this not unfrequently happens even when the exostosis is of very small size. In the Museum of St. George's Hospital there is a frontal bone with several internal exostoses, the largest not bigger than a pea, which appeared to have been the exciting cause of fits of an epileptic character. The patient, a girl of seventeen, had suffered from fits for several years. I have seen several other specimens of the same kind, in which the growths of bone had been accompanied by similar symptoms. The son of the celebrated Massena died in a fit of epilepsy connected with an internal exostosis of the shape of the styloid process. But, on the other hand, I have also seen the internal surface of the frontal extensively covered with knobbed exostoses pressing upon the brain without a single symptom, the patient having been singularly free even from headache.

It seldom happens that an internal exostosis reaches to such a size as to give rise to any manifest degree of pressure. A case, however, is mentioned by Lecat, in which a man died with symptoms of compression, and in whose skull was found an exostosis of the size of an egg, lying in one of the cerebellar fossæ.

The diagnosis of an external exostosis is, generally speaking, an easy matter. A growth of hard bone thus situated

presents such peculiar characters that it would be difficult to mistake it for any other tumour of the cranial region. The difficulty lies not in diagnosing such a tumour, but in making out its exact limits. An exostosis, to all appearance external, may project also into the skull, and that without anything to lead to such a suspicion. The difficulty of determining the exact limits of an exostosis is especially great in the frontal, in the orbitar, and in the nasal regions. And in dealing with exostoses in these spots, especially should it be borne in mind that they for the most part spring from the sinuses, and above all, that they are just as apt to make their way into the brain-case as they are to extend towards the surface. In Sir William Lawrence's case the tumour appeared to be limited to the anterior and inner part of the orbit; but, after death, dissection proved that the frontal sinus was filled with the growth, which had, moreover, made its way into the skull.

Any attempt at diagnosing an internal exostosis must, as a matter of course, be next to impossible, except under very peculiar circumstances. Brain-symptoms co-existing with an external exostosis, for instance, may lead us to suspect an internal exostosis—an exostosis of the diploë projecting both outwards and inwards. And in like manner brain-symptoms coming on after fracture of the skull or injury of the head of some standing, may lead to the suspicion of an internal exostosis, or, what amounts to the same thing, splinters—depressed portions of the inner table, which, instead of being partially absorbed and smoothed down, remain angular, grow, and become as hard as ivory.

Thus it happened in a case of Emmert's. A countryman, twenty-two years old, who had met with an injury of the head six years previously, suffered from continuous pain, more or less violent, at the seat of the scar; then came occasional vertigo, loss of memory to a great extent, and melancholia. The brain-symptoms increased, so that the patient could no longer quit his bed, the upright posture being immediately followed by vertigo, &c. Examination proved that the injured spot was pretty nearly confined to the right frontal eminence, where the bone was swollen and slightly prominent. This led Emmert to think that the brain-symptoms might

possibly depend upon an internal exostosis, the result of the injury. Trephining was proposed and accepted. The thickened part of the skull was laid bare, and a piece of bone, an inch in diameter, removed with a large crown of trephine. The excised portion of bone was unusually thick, and showed on its inner surface, pretty nearly corresponding to the external thickening, a ridge of bone, transverse in direction, projecting abruptly to the depth of two lines, and about four lines broad by eight long. The diploë at this point had disappeared for the most part, and the tissue of the bone was hardened. The dura-mater was natural in appearance. Soon after the operation, the pain in the head ceased; the other symptoms gradually disappeared, and six weeks afterwards the patient was restored to his former good health.

In Professor Dudley's cases, the growth of bone, exostosis-like, was still better marked.

A young gentleman, aged twenty-one, was trephined for fits of an epileptic character, which had come on after an injury of the head received sixteen years previously. The trephine was applied over a small depression of bone corresponding to the original site of the injury; and the piece of bone which was removed presented a process projecting from its inner surface about one inch in length, of the size of a small quill at its base, and tipped with soft cartilage at its extremity. The patient ultimately recovered.

In the second case, that of a young man aged twenty-three, the trephine was also applied for fits of epilepsy, apparently connected with a depressed fracture; and after the removal of the bone, a spinous process about half an inch long, its base being of equal dimensions, was found projecting from its inner table.

In the following case, mentioned by Mr. Travers, nothing is said about any former injury of the skull; but the "depression" makes it more than probable that there had been one. In a boy admitted into St. Thomas's Hospital, under the care of Mr. Birch, for epileptic fits, a pit or depression was discovered on the skull. Upon this spot pressure created uneasiness. A trephine was applied, and the concave piece of bone removed: at the instant of turning it up, the patient had a sharp epileptic fit; and this was the last. From the

internal table a spiculum a quarter of an inch long projected and pressed upon the dura-mater.

What is to be done with a cranial exostosis? Is medical treatment likely to be of any avail in such cases? Not as far as the exostosis itself is concerned; but as exostoses, even of the hardest kind, are frequently accompanied by inflammation and evident increased vascularity of the surrounding osseous tissue, remedies usually resorted to under such circumstances may be of great use.

And as to operative interference. It should be laid down as a rule that we are not to operate upon a cranial exostosis unless compelled to do so, either by its increasing size or the peculiarity of its position. And in taking into consideration anything like operative interference, especially should we bear in mind the great doubt which must necessarily exist as to the exact limits of the growth; how deep it may extend; the great difficulty we may, and in all probability shall, have to encounter from the peculiar hardness of the bone; difficulties which in some cases have been such as to baffle the most untiring efforts, and ultimately proved to be insurmountable; and lastly, the risk of our efforts being followed by intracranial mischief of a deadly nature.

A young man was sent up to Paris, to J. L. Petit, on account of an enormous exostosis on one of the parietal bones. The case ultimately fell into other hands; and a trephine was applied on the top of the tumour, which proved to be excessively hard, so hard that there was the greatest difficulty in getting the trephine to work. After the application of one crown of trephine, the operators, worn out by their exertions, were fain to put off any further attempt until the following day. Feverish symptoms, however, set in, and the patient died within a few days.

A girl, 20 years old, was admitted into St. Bartholomew's Hospital with protrusion of the left eye-ball, due apparently to an osseous growth projecting at the anterior, upper, and inner part of the orbit. As the tumour was increasing, and produced severe pain in the eye-ball and about the side of the head and face, it was thought advisable to attempt its removal, or at least some part of it, with the hope that the disturbance of its growth might lead to its necrosis and sepa-

ration. A portion of the tumour was with great difficulty sawn off; and the patient died with suppuration in the membranes of the anterior part of the cerebrum. The preparation is in the Museum of St. Bartholomew's. The tumour was one which sprang from the frontal sinus, and extended in various directions.

In the preceding cases, operative interference was followed by death. But, as far as can be gathered from recorded cases, cranial exostoses have been much more frequently than might have been expected, taking all things into consideration, successfully removed.

The exostosis has been sawn off on a level with the skull; and this, when feasible, is perhaps the best way of proceeding.

Bruns succeeded, thus, in removing a large exostosis with a broad base about one inch and a quarter in diameter, and about three-quarters of an inch in height, from the middle of the forehead of a woman 32 years old. The tumour was laid bare by a perpendicular incision, and the bony growth sawn off by two sections with a thin-bladed saw, worked horizontally from each side of the swelling at its base to meet in the middle. The excised piece consisted throughout of a mass of compact bone. The whole wound healed by first intention, except the lower part, which was, however, healed within ten days.

Sometimes the exostosis has been chiselled out by means of the gouge and the mallet. And an operation of this kind might prove neither difficult nor tedious, as the bone around the tumour may be in a healthy state, or even porous, and not so hard as usual, and by taking care to work upon the bone at some little distance from the tumour, a large exostosis may, as it were, be dug out bodily.

A woman, 24 years old, was admitted into the Clinique at Pisa, with an exostosis of the size of a hen's egg, from which she had been suffering for several years. It was situated at the lower and middle part of the forehead, and was accompanied by head-symptoms which led Professor Regnoli to attempt its removal. Laid bare, it was found to be of the ivory kind, and firmly fixed. Gentle blows by means of a hammer and gouge brought away the mass with the anterior

table of the frontal: parts of the corresponding nasal bone, and of the ascending process of the superior maxillary, also affected with exostosis, were removed at the same time. The actual cautery was then applied: necrosis followed, and the dura-mater was laid bare. Nineteen months afterwards the patient was completely cured.

A soldier, aged 33, had on the forehead an enormous exostosis, which was increasing in size. Heister attacked it with the hammer and gouge, and brought it away, extensively laying bare the dura-mater; notwithstanding which, the patient ultimately recovered.

In a third case, an ivory exostosis, three inches long and one and a half inches broad, was removed by Mr. Massey from the middle and lower part of the frontal. The tumour having been laid bare, a groove was made around its base with Hey's saw; after which, by means of a chisel and gentle blows with a small wooden mallet, the whole growth was removed bodily. It proved to be of the hardness of the most compact ivory. The wound was perfectly healed within eight days.

And so, too, a few years back, M. Maisonneuve succeeded in digging out a large ivory exostosis from the left orbit, the cavity of which was for the greater part filled up by the growth. In proceeding with the operation, M. Maisonneuve found that the tumour was connected with the inner wall of the orbit, and, in breaking through this, the mass was traced into the ethmoid, from the cells of which it was supposed to have originated. The mass of ivory-like bone was removed bodily, and is now in the Musée Dupuytren. The patient recovered perfectly.

In the preceding cases, the operation was not attended with any very great difficulty: not so, however, with the following cases, wherein one knows not which to admire most—the untiring efforts of the surgeon, or the unflinching courage of the patients.

A girl, aged 17, was hit with the end of a rake, which penetrated into the orbit. Eighteen months afterwards a hard tumour made its appearance under the upper lid, and gradually increased in size. The patient was seen by Dr. Salzer four years after the accident. The tumour was

then exceedingly hard; covered over by the upper lid, it not only filled the orbit, but even projected beyond, driving the eye-ball out close to the ala of the nose; sight was not, however, altogether lost. Dr. Salzer laid bare the tumour, which was found to consist of exceedingly hard bone, bits of which were chipped off, to the amount of about ʒiij., by means of a hammer and chisel. After working thus for three hours, it was thought that the tumour had become loose; but all attempts to get it away having proved fruitless, its removal was postponed to another day. Subsequently the tumour was trephined at six different times, and the whole of it was ultimately removed. The operation was followed by slight suppuration; the eye-ball gradually receded, and within six weeks regained its natural position; the sight was not lost. The whole of the osseous tissue which had been removed weighed, when dry, about a couple of ounces.

In a chimney-sweep, aged 54, the whole of the upper and inner circumference of the right orbit was occupied by a large hard bony tumour of many years' standing, which, projecting into the orbit, had driven the eye outwards and downwards far on to the cheek, and completely destroyed the sight. Gerhead van der Meer first extirpated the eye-ball, and two days afterwards an attempt was made to remove the tumour by exposing it, and repeatedly trephining it with the crown of a trephine; the growth, however, proved to be so excessively hard that recourse was had to the hammer and chisel; but this was soon given up on account of the shocks to the brain. From this time a small thin portion of bone was removed every day by hammer and chisels of various kinds; an attempt made to soften the bone by the application of mineral acids having failed. After eight weeks of daily operations, so much of the growth was finally removed that all that remained of the disease was a slight thickening of the upper and inner wall of the orbit.

In the cases hitherto under consideration, the tumour was, sooner or later, removed by instruments of various kinds. But exostoses of the cranial region are sometimes so excessively hard that their removal by means of instruments becomes a matter of impossibility; and two of the best ope-

rators of our own day, after long-continued efforts, were of necessity forced to abandon the operation.

In the Museum of St. George's Hospital there is a nodulated mass of bone, of ivory hardness, which grew from the upper margin of the orbit. The history of this preparation is curious. Sir Astley Cooper tried in vain to remove this growth by means of a saw, and after long-continued efforts the operation was abandoned. Some years afterwards the patient was admitted into St. George's Hospital under Mr. Keate, who, after repeated applications of nitric acid, ultimately had the satisfaction of seeing the exostosis drop off bodily. At one point of the preparation may still be seen the mark of the saw used by Sir Astley Cooper; and this shows how little way had been made even after upwards of an hour's hard work.

There is also in the Museum of St. George's Hospital another preparation bearing pretty much the same history. The specimen is that of an ivory exostosis which grew from the orbit, and which Mr. Keate in vain endeavoured to remove by means of the crown of a large trephine. Caustic was subsequently applied, and the whole tumour ultimately dropped off. The deep circle of the trephine-mark shows how desperate must have been Mr. Keate's efforts before he gave up the operation.

Caustics may, then, be of the greatest service in the removal of even the hardest ivory tumours. And, when applicable, there is no doubt that they alone are sufficient to bring about the death and sloughing-off of very large exostoses. But in the application of these caustics great care must be taken. In speaking of the removal of exostoses by the chisel and the mallet, I said that if such means were resorted to, it would be advisable to attack the bone around the exostosis, and not the exostosis itself: but in applying caustics the opposite course must be followed; the caustic must be applied to the exostosis itself, at a short distance from the mother bone. By proceeding thus, the chance of intra-cranial inflammation, which might be produced by the free application of caustics upon the skull itself, may be avoided. Abercrombie quotes two cases from De Haën, in

both of which intra-cranial suppuration followed the application of the actual cautery for amaurosis.

Lastly, an exostosis of the margin of the orbit has been destroyed by simply uncovering its surface and keeping it exposed.

Such an exostosis was thus exposed by Mr. Lucas, and, after twelve months, it became carious, and was detached. (Paget, vol. ii. p. 237.)

PRESCOTT HEWETT.

June 1867.

## II. CLINICAL CASES OF INSANITY.

THE curability or incurability of the various forms of insanity is a subject of the utmost importance; yet it is but little discussed in our systematic books. Not the question merely of life or death, but of the chance of recovery after a long or a short period, is one on which an opinion is often required; for upon it depend frequently matters of great importance. The disposition of the patient is first of all a point for grave deliberation. Must he be sent to an asylum? Will other measures afford an equal chance of recovery? Will he recover after a short period, or a long period, or not at all? The authorities of Bethlem and St. Luke's Hospital admit only curable patients; and their rule of curability is that the patient must not have been insane more than twelve months; and without doubt this rule would hold good in the majority of cases. The disposition of property is often determined by the opinion we give of a patient's incurability. An eldest son may be insane: after three or four years his father asks the question, "Will my son ever be able to succeed me and to manage an estate? Shall I leave it to the second son?" And upon the advice given by medical men he will probably act. Such questions having been asked of me on several occasions, I wish to bring forward three cases which may lead us to give a cautious opinion with regard to one form of insanity. It is possible that monetary difficulties may necessitate a commission of lunacy even at an early period of the insanity. If recovery takes place, this can be set aside by *supersedeas:* but testamentary disposal of property is another matter; and great confusion may be, and has been, caused in families by

the reappearance of one who has been for years in an asylum and looked upon as incurably insane.

The following is the case of a gentleman who was admitted into an asylum in November 1857. The attack was the first, and recent, without assignable cause. He had all the characteristic delusions of melancholia—said that he had committed the unpardonable sin; nay, that he was himself the devil. He also fancied himself ruined, and that actions were being brought against him on account of non-payment of his debts. He thought that he had the leprosy of the Old Testament, and that all his friends were dead.

Though this gentleman was melancholic in his delusions, his appearance and conduct were not so much affected as might have been expected. He was never looked upon as suicidal; he never refused his food; on the contrary, he ate heartily, and enjoyed that which was brought him. He was keenly alive to all the passing events of the day, whether political, strategical, or polemical, and was probably the best-read man in London in the newspapers and current literature of Mudie. On the other hand, he was excessively shy, and liked to be quite alone; and all day long he paced his room with regular and unceasing tramp, so that none but the most apathetic of patients could endure to remain underneath. And when alone he used to cry bitterly, bewailing his fate, and ejaculating expressions of anguish. Immediately one entered the room all trace of this emotion was concealed. Unlike most melancholic patients, he was unwilling to talk to me of his delusions; but to his friends he spoke of them without reserve. He never asked to be allowed to go away, but seemed indifferent to his own concerns, succumbing quietly to an inevitable fate. When we forced him to go to the seaside, or to some sight, as the Volunteer review, he would greatly enjoy it; but always tried to avoid going. So matters went on from 1857 to 1864, the patient becoming more and more shy and reserved, and less inclined to go beyond the bounds of the asylum; constantly crying and bemoaning himself when alone; but always chatty and agreeable, and taking an interest in all the events of the day.

Insanity may be described, if not defined, as a want of harmony between the mind of the individual and his external

surroundings. As life is "the continuous adjustment of internal relations to external relations," so any cessation in this process of adjustment causes disorder, mental or bodily. If the relations are themselves altered—if a man loses his fortune, or his friends, he must come into harmony with his new set of circumstances, or he perforce is thrown out of equilibrium, and "loses his head." If his brain becomes so disordered that he fancies his circumstances are all changed, the same thing happens; and when he attempts to right himself by force, or to rid himself of the entire burden, he is shut up for safety and for cure. Now our object, of course, is to bring a patient back to his former condition—to restore the harmony which existed, and which ought to exist, between him and the world in general. This we must, above all, try to accomplish. There is such a thing, however, as bringing a patient into harmony, not with his former life, but with asylum-life; and this is what happens not unfrequently, and happened in the case of this gentleman. In the asylum he had everything that he wished for. Self-indulgent by the nature of his malady and by constitution, fond of being alone with his books and papers, indulged and kindly treated —for no one could be harsh towards the gentlest of men—he might have gone on to the end of his days, enjoying the lazy luxury of his mild melancholy, had not the harmony of his new life been in turn broken up and marred.

A domestic affliction, the heaviest that could befall him, first woke him out of this tranquil life. It might have been thought that this would increase his melancholia, and dash him down to a worse state. But it was not so; it necessitated action, for he was brought into new relations. He must act for himself, or give up everything to others' hands; yet even now he made no request to be allowed to do so. It was so plain, however, that he was capable, that the attempt was insisted on. But half consenting, he went away with a friend upon trial. The friend fell seriously ill, and my patient had to nurse him long and anxiously; and by the time the friend recovered, the nurse had forgotten that he was the patient; and no one from that time has more thoroughly and keenly enjoyed life and its pleasures. One cannot help thinking that it might be possible by breaking

up the quiet monotony of asylum-life to cure others besides this patient. There is such a thing as making asylums too comfortable.

The next was as unpromising a case as could well be encountered. A widow, æt. 56, who had been much in India, was admitted with well-marked symptoms of melancholia in November 1855. Her malady took the form characterised by apprehension and terror, which by some is considered distinct from that wherein regret and remorse predominate. She would not speak to anyone if she could help it; but she constantly paced one corner of her room, and indicated by look and gesture the greatest anxiety and terror. She said she had lost all her property, and was condemned to punishment and death, and deserted by all her friends. Talking or muttering to herself, occasionally ejaculating "My God, my God!" and picking and rubbing her hands till they were sore, she presented the appearance of a typical case of melancholy. She refused her food, saying she had no right to eat, and that her wretched life must be put an end to; thus revealing the suicidal tendency which the other symptoms would lead us to expect. She slept badly, always requiring morphia; and the bowels were extremely obstinate. In this condition she remained without variation for nearly five years. In this time there was no change worthy of notice. She was thin and looked miserable, but was querulous and exacting, requiring constant attention.

In June 1860 she had an attack of eczema, which commenced behind the ears and on the left arm, and then spread over the neck and shoulders. This lasted some time, but yielded at last to tonics, as bark and mineral acids. About Christmas in this year 1860 a decided improvement in her mental state was noticed. She took more interest in others. The change was at first so gradual that it could not be recorded from day to day, but every month found her better; and her condition altered little by little till she became in every way the opposite of what she had been, and those about her hardly considered it a change for the better. She took a violent dislike to the nurse who had for so long faithfully attended her, accusing her of all kinds of imaginary offences; she talked excitedly and incessantly, and was full of new delusions.

Then she became extravagant, and inclined to spend money recklessly. By degrees she improved, talking more rationally, and with less complaint of persons and things. And so she came back from this opposite state, and regained the balance of her mind. By June 1861 she was able to go to the seaside with her relatives, and shortly after was discharged recovered.

It will be asked whether the eczema had anything to do with her recovery. Probably in former days it would have had more credit assigned to it than at present. The improvement in her mental state began at the time the eruption ceased, so that at any rate the circumstance appears worthy of record. This, however, is to be noted, that her mental improvement did not take place at the commencement of the eczema, vanishing again when this disease was over, as happens not unfrequently in scarlet-fever and small-pox, but that it commenced at about the time the skin-disease was cured, and went steadily onwards to recovery.

The next was also a case of well-marked melancholia. The patient was a gentleman, æt. 31, who had been living for some time in an unhealthy tropical climate, to which his malady was attributed. He was a man of more than average abilities, of great frontal development, a distinguished mathematician. When admitted in July 1861, he presented all the appearance of a melancholic patient. His eyes were cast down, and he muttered to himself, and indicated impatience at being questioned. He imagined that he was going to be put to death by torture for murder and forgery. His complexion was pale and muddy, his face puffy. He was suicidal, though he did not violently refuse his food; but he tried to shirk and avoid it, would secrete it in his clothes or under the carpet, so that he had to be watched at meal-time. He would not enter into conversation, but paced backwards and forwards in the grounds, shunning company and observation. It was difficult to make him talk, but when he spoke it was always to say that he would sooner be shot than endure the coming torture. He was, however, a great reader, and would devour all books within reach, though he would not ask for any or converse on them like the first-named patient. He had to be washed and dressed, for he greatly neglected his person.

He was totally unaffected by the news of his father's death, and by a commission of lunacy held upon him. Thus he went on without change for two years, when he was removed to Dr. Fox's asylum, near Bristol, to be nearer to his family. Dr. C. H. Fox informs me that he continued in the same state for two years more; but that in the spring of 1865 he began to improve, became less morose and taciturn, and in time conversed freely, persisting, however, in a fancy "that he is not like other men, and cannot die."

He then changed much as the lady above mentioned. By July 1865 he was "too loquacious, always on the move, prying into everything, and irritating other patients by his curiosity and questioning, still having many delusions. In September he was flighty and quarrelsome, calling the other patients names, and evincing a want of decorum in manners and conversation. By the commencement of 1866 he had much improved, had become more tranquil, occupied himself rationally, and walked about the neighbourhood alone, conducting himself with propriety." He was discharged recovered in June 1866, five years after the commencement of his illness.

These three patients recovered after illnesses of seven, six, and five years' duration. Such recoveries are rare in those affected with monomania, characterised by hallucinations and delusions not melancholic. But where great depression is the prominent feature, it appears that the delusions attending it will vanish if the feeling itself passes away; and we learn from such cases once more the lesson, that the greater the emotional disturbance in any insane person, the more favourable is the prognosis.

Having enumerated these cases of recovery after many years of seclusion, I will mention some examples of the most transient variety of insanity, of what has been called *mania transitoria*. This form is scarcely alluded to in systematic treatises; and the reason of this is, I believe, that such patients are rarely sent to asylums; consequently the large section of authors who describe only the cases which come under their notice in public or private asylums never see them at all. Certain formalities are required, and a certain time must elapse, before a person can be admitted into a public asylum; and in this time these patients recover.

There are at least two varieties of transitory mania: one is connected with epilepsy, and proceeds directly from an epileptic attack, or may take the place of it. It is very important to recognise this form, especially in cases where, under the influence of it, great crimes have been committed. M. Marcé says that it is more common than the other variety; this, however, I think very doubtful.

In the non-epileptic class we see an attack of acute mania with all the usual violence, delirium, and delusions, running a rapid course, and terminating in recovery in a week or less. When called to one of these cases, we wish of course to decide whether it is a transient attack,—whether it will all subside and the patient be well in three or four days, or whether it will run the usual course of acute mania and last at least four or five weeks; and it is very important that we should come to a right decision. Not that it is absolutely necessary to send every case of acute mania to an asylum. This disorder runs a tolerably definite course, and recovery may take place anywhere, if we are able to treat the patient judiciously. A country-house in a park or garden becomes at once a ready-made asylum; but in a small house in a London street it would not be possible to treat for weeks at a time a case of acute mania. It therefore is necessary that we should know whether a case will recover in a few days or not,—whether it is or is not transitory. It is not easy to lay down rules for such a diagnosis. Time comes to our assistance and solves the difficulty for us; yet there are some points which, from a study of such cases, may be gathered to aid us in our conclusion.

I have lately seen several patients who have had attacks of this transient character, some of which I will briefly describe.

A clergyman, æt. 30, had undergone a good deal of excitement at the idea of approaching marriage. In addition to this he had some exciting theological controversies with his rector, and suddenly broke out into a state of violent maniacal delirium, dancing, shouting, singing, and stripping off his clothes. He had many delusions connected with supernatural and religious topics. He lived at some distance in the country; and, although two attendants were sent down to

remove him to town, some days elapsed before he became sufficiently quiet to travel. At last he was fit to undertake the journey, and he was brought up with certificates duly signed for his admission into an asylum. When, however, I saw him on his arrival, it was evident that the attack had passed off, and that he had recovered. He was somewhat exhausted by his journey and by what he had gone through; but he that night slept some ten hours, and on the following day it was impossible to detect any aberration in him; and it would have been equally impossible to give an opinion as to any act of crime or violence committed a week before, except from the hearsay testimony of others. This gentleman remained under my care for a week or two, simply for change of air and scene, and has continued perfectly well ever since, a period of some six months.

I was one day called to a wretched-looking emaciated lad of 18 years, who was held on the bed, struggling and striking, by his father and the footman. He was making an inarticulate roaring noise, and was very violent. I heard that this attack had come on quite suddenly after a quarrel with his brother. He had been ailing with "chest symptoms," depending probably on the state of his heart. He had had one short paroxysm of the same kind the previous day, which had soon passed off. When I saw him the following day I found him lying on his back, his eyes staring and pupils dilated. He would not answer questions or speak at all. He had had upwards of five hours' sleep, had been quite conscious in the night, and had interrogated his attendant rationally. I did not see him again, but heard that in a few days he recovered.

In 1861 I was sent for to see a single lady, æt. 48, whose catamenia had ceased two years. She was in a state of acute mania, very violent, requiring to be held on the bed by force, laughing and screaming. She had to be closely watched and guarded for a day or two, when, after some simple purgative treatment, she suddenly recovered, and remained quite well for two years; when she had another attack, apparently caused by the fatigue of a long walk. She was not so violent this time, but thought she had committed some sin, rambled in her talk, and was almost incoherent. When I saw her two

days afterwards she was perfectly calm and rational. She had taken half a grain of podophyllin, with some colocynth, which had acted five or six times. She had then slept and awoke well. Two years later I was again called to see her. There was no excitement or screaming on this occasion. She was inclined to be melancholic, wishing to be killed, quiet and rambling. Without a knowledge of her previous attacks it would have been hard to say that this would pass off speedily. Nor did it depart so quickly as the former: yet in a fortnight, with some simple treatment, she was quite well, and returned to her usual habits and occupations.

A short time ago I saw a single lady, æt. 45, who was beginning to undergo the change of life. She had had on the previous day a violent outburst of acute mania, requiring to be held by several people. This was the fifth attack of the kind, the first having occurred when she was no more than 22. On the day I saw her she had not slept, her pulse was 120, hard and strong, her skin was hot, her face flushed and eyes injected: there was every sign of increased cerebral arterial action. She opened her eyes widely and stared at me with a peculiar and wild expression, talked in a rambling and eccentric style, coherently but incorrectly, in a way quite foreign, as I was told, to her usual manner. Her tongue was pale and moist, the urine pale and plentiful, and her bowels had acted freely after a dose of calomel. She was ordered a warm bath, with cold to the head, and some extract of henbane and tincture of digitalis. The next day she was in every way better, and had slept four hours. From this time she gradually improved, having no return of the acute symptoms; and in a week, beyond a certain amount of languor and nervousness, there was nothing the matter with her. When she got better she told me a variety of delusions which she had experienced, such as that articles of furniture were alive, that those about her were enemies going to attack her, and such-like. The attack was manifestly not one of mere hysterics, but was in all respects one of acute mania, but of a very transient character. So far as I could learn, her former illnesses had been more protracted, though of the same nature; and it is somewhat remarkable that at her time of life she should have had a milder form of her old malady. The

exciting cause of the last seems to have been anxiety and disappointment arising out of litigation.

Another patient was a young lady of 20, or thereabouts, who had somewhat suddenly lost a near relative. When I saw her, she was in a state of acute and raving mania, which lasted for about two days. She then slept, and awoke quite well in mind, but weak and exhausted. Although this patient was so violent as to require to be held upon the bed, yet the apparent gleams of consciousness which I could detect, and the state of tongue and other bodily symptoms, made it well-nigh certain that the attack would subside in a short time.

I believe that epilepsy had nothing whatever to do with the transitory mania of any one of these five cases. They appeared to be attacks of genuine mental disorder—of transient insanity. What the difference is pathologically between these and others of longer duration, it is hard to say; for we know as yet little of the pathology of the whole subject. In all probability both forms, the protracted and the transient, depend for the time on a similar pathological state or condition; but in the latter the cerebral circulation is not so profoundly disturbed—a persistent state of derangement is not set up; and the whole tumult subsides before the disordered action becomes established as a "habit." We may to some degree illustrate the difference by comparing a transitory attack of mania from drink with the delirium of chronic alcoholism. A man may be to-day "mad drunk," his brain maddened by a large quantity of liquor; yet when he has slept this off, he will wake recovered. Another will glide into delirium tremens even when he has been deprived of drink, and this will run a course of many days.

How are we to tell whether the attack will be transient or not? To decide this at a glance is not easy; but it is to be remembered that two or three days will solve the question for us. The symptoms both of transient and protracted mania vary so much in different individuals, that it is difficult to lay down strict rules of diagnosis. It is likely, however, to be transient, if its invasion is very sudden, and if there is a definite and sufficient mental cause, as a shock or fright. It is likely to be prolonged, if its approach has been very insi-

dious and gradual, and if there is no assignable cause. If the bodily condition is much affected; if the tongue is brown and dry, the urine scanty and high-coloured; and if the bowels can hardly be moved by the strongest purgatives—it is not likely to pass off in a few days. If, on the other hand, the bowels are easily and freely opened, if the urine is copious and pale, and the tongue pale and moist—we may hope that it will be soon over, especially if there is extreme violence, bearing no proportion to this slight bodily disturbance. And our decision will be aided by the advent of sleep, if this occurs in a day or two. If the disorder is to run the ordinary course of acute mania, sound and long sleep is not to be expected at so early a period. If former attacks have occurred, our diagnosis will be materially assisted by the history of them.

Concerning treatment there is little to be said: chiefly we must abstain from *nimia diligentia;* and here, as elsewhere, everything will depend on the judicious behaviour of those in charge of the patient, whether nurses or friends. I have seen in these cases great good come of purgative medicine, the effect possibly depending on its action as a counter-irritant. That counter-irritation is most valuable in disorders of the brain all admit; but in my opinion it should be applied much further off than the shaven scalp, or even the nape of the neck. If the patient is young and vigorous, it is not likely that he will derive benefit from opiates; but digitalis and hyoscyamus may be of service. Packing in the wet sheet, warm baths, with cold to the head, and such measures, will procure sleep more certainly than will medicines. And removal to an asylum is not to be carried out till it is certain that the illness is not transient, and such a measure inevitable; for it is easy to convert one of these short attacks into a prolonged and obstinate mania, and I know of nothing so likely to effect this as the terror inspired by such removal.

GEORGE FIELDING BLANDFORD, M.D.

# III. DISEASES OF ARTISANS.

## No. I.

### THE SHEFFIELD FILE-CUTTERS' DISEASE.

FEW subjects are of greater interest than the consideration of the trades carried on by the working-classes as influencing life and health. My position as the senior physician of the Sheffield Public Hospital, of necessity has brought me, during the last fourteen years, in contact with many patients suffering from diseases the result of the occupations in which they are engaged.

It is a fact, as true as it is lamentable, that many of the trades pursued in the large manufacturing towns of this country, which add to its wealth and increase its commercial importance, give rise to peculiar diseases, which increase the bills of mortality, and add not a little to the death-rate of the towns in which such trades are carried on.

In a series of papers, of which this is the first, it is proposed to explain the diseases peculiar to certain trades, and resulting from the occupations of the workmen; the causes from which such diseases arise; and what has been found the most effectual in the prevention and treatment of them.

The effects of arts, trades, and professions, on life and longevity will best be shown in each paper, by first explaining the various processes in which the workmen are engaged.

#### THE MANUFACTURE OF FILES.

The forging, grinding, cutting, and hardening of files forms one of the most important branches of the Sheffield

trades, and one in which the workmen suffer most severely —at any rate in one part of the manufacture of a file. This is one of the trades which has a *Union*, and consequently one the numbers employed in which can be readily ascertained.

| | |
|---|---|
| Forgers and cutters . . . . | 3500 |
| File-grinders . . . . . | 250 |
| Hardeners . . . . . | 200 |
| Females . . . . . | 300 |
| Boys . . . . . | 1000 |
| Dressers, strippers, and coke-riddlers | 300 |
| Managers . . . . . | 200 |
| | 5750 |

If to this number be added the manufacturers, and those not connected with the Union, it will be seen that nearly 7,000 men, boys, and women of the inhabitants of Sheffield and its vicinity are engaged in the manufacture of files.

The File-smiths' Union is one of the most powerful in Sheffield. From 1854 to 1865 it paid 51,044*l.* 17*s.* 2½*d.* to its members when out of work. During five years this Union paid for 312 deaths, viz. 297 men and women, and 15 boys, 1,156*l.* 6*s.* The Union contributes fifty guineas a year to our Hospital for the privilege of recommending the poorer members when suffering from the file-cutters' disease, as in- or out-patients. The wages of the better class of double-handed forgers will average about 2*l.* a week; single-handed forgers 1*l.* 5*s.* to 1*l.* 10*s.* a week; cutters of a superior class of work 1*l.* 10*s.*; boys 6*s.* to 18*s.*; female cutters 6*s.* to 18*s.* a week; scourers, &c. 9*s.* to 12*s.* a week.

*Manufacture of a File.*—In speaking of the wages of file-forgers, single and double-handed forgers have been mentioned. Small files — say all under ten inches — are made single-handed. The larger files require a striker, who, using a very heavy double-headed hammer, aids the skilled forger in moulding the steel into the requisite shape. The history of a file is simply this (as a rule horse-rasps are forged from bar-steel, and other files from cast-steel): when forged the file is sent to be annealed or softened in a furnace or baking-oven; it then goes to the grinder, who, placing it upon the wet stone, grinds it until he makes it perfectly white, and

marked only by the grain of the stone. The best smooth files are next stripped and filed from heel to point, and are then ready for the cutter. The file-cutter uses a hammer which varies in weight according to the size of the file, a chisel, and also a leather stirrup, which is for the purpose of holding the file upon an anvil enclosed in a stone stock.

While being cut *the file rests upon a bed of lead;* and where many men are at work in the same shop fine particles of lead-dust abound in considerable quantity. In cutting files it is the custom of the men to wet the thumb and finger of the left hand, with which the chisel is held, by putting them into the mouth, and so moistening them with their saliva. The left hand is more or less constantly resting on the lead. At every shifting, and when the file has to be turned, the lead is handled; and thus, in a variety of ways, lead is absorbed into the system.

File-cutting is a very laborious calling; more especially the cutting of the larger and heavier kinds of files. A file with a thousand cuts on each side is made with a hammer and chisel, the hammer weighing seven pounds and a half. It has three hundred cuts on the edge, for which a hammer weighing three pounds is used. A man working for ten hours a day can cut about twenty of this kind of files; and to do this, it has been calculated that he must lift about one hundred and forty tons in weight during his day's work. Few files as yet are cut by the new patent machines in Sheffield: machine-cut files look very well, but are found to be, when used, very inferior to files cut by hand.

After cutting, the next process is hardening. This is done in two ways: files are either hardened in a coke fire, or *in lead.* At present the usual way is in the coke fire. Perhaps out of two hundred Firms manufacturing files, not more than twenty have as yet adopted the lead system.

*Hardening Files in a Coke Fire.*—If the old process of hardening files in a coke fire be adopted, the file is brushed over with ale-grounds and salt, a covering which guards it against the effects of the coke fire, and in which it has to be thoroughly heated without being burnt. It is next "set" and straightened with a hammer of wood or of lead; it is then dipped in salt and water, and afterwards taken out and

"strained" by the hardener to the requisite form. The files are then scoured by women with water and fine sand. Lastly, the files are plunged into lime-water in order to impart that peculiar gray colour which renders the Sheffield files so beautiful in the eyes of connoisseurs; these instruments being as beautiful to look at as valuable to use. The "tang" of the file is, lastly, tempered in hot lead; after which the file is brushed and oiled, and then wrapped up in paper for market.

*Hardening Files in Lead.*—The file is covered with a composition of one part of wheaten flour, two parts of fine charcoal dust, and three parts of common salt. A small pan about ten inches in diameter, which contains the lead, is surrounded by a coke fire, and stands in the centre of the furnace, which presents a surface, more or less heated, of about four feet square. The lead is kept covered with fine coke-dust, or, what is still better, with finely-ground old steel pots; for this material is found to lie closer than any other to the surface of the heated lead, preventing what the file-hardeners call waste—that is to say, oxidation of the lead, which is kept at a good red heat, but certainly below the temperature at which lead volatilises. Into the heated lead the files are plunged.

As this process is much cheaper than hardening in a coke fire, it is daily coming more and more into use, and in a short time will in all probability be the only process by which files are hardened. It therefore affords me pleasure to state that the result of my investigations is that the process is not injurious to health, and that it does not give rise to the file-cutters' disease. In fourteen years I have never had a case, either in hospital, dispensary, or private practice, in which I could trace any injurious effects to this process. A moment's consideration must convince anyone that, at any rate with the most ordinary precautions, this mode of hardening files may be rendered quite harmless to the workmen. But, unfortunately, daily experience proves that it is just these ordinary precautions which are so frequently omitted through ignorance or carelessness in many departments of life. If the workmen suffer from hardening files by the heated-lead process, it can only be from the fine particles of oxide of lead

which are carried upwards by the current of air rising from so large a heated surface. This takes place more especially when the files are plunged into the pan, and the covering of coke-dust and dross of oxide of lead is disturbed. Nothing could be more simple or easy than to place a hood over the pan, leading up by a shaft to an opening in the chimney of the furnace. The current of air and the fine particles of oxide of lead would then to a certainty pass in a direction away from the person of the hardener. The prevalent idea that a vapour containing oxide of lead is given off during this portion of the manufacture of files is altogether erroneous. Even supposing any chloride of lead were formed from the salt in the composition used in covering the files, its vapour must be visible if the temperature were high enough to render it volatile. I have never seen such vapour, and my long experience has never enabled me to trace even one case of this disease in this part of the work; I do not remember to have seen one file-hardener suffering from lead-colic, nor from any symptom that could fairly be attributed to lead. True, I had one out-patient who had the blue line; and yet he had only been employed for a very few months in hardening files in lead. But he had been previously a file-cutter for years, and had very frequently been a sufferer from the file-cutters' disease.

## CASES OF FILE-CUTTERS' DISEASE.

I am indebted to Mr. Henry Brietzcke, our house-surgeon at the Hospital, for the following extracts from the Hospital case-book of cases of file-cutters' disease.

CASE I. *Samuel Parkins*, æt. 26, married. Admitted into the Sheffield Public Hospital, April 10th, 1867, under the care of Dr. Law. He had been a file-cutter since the age of 10 years. Had always enjoyed good health until two years ago, when he was seized with an attack of colic. This lasted eight weeks, during which time he suffered much pain in the abdomen; his bowels were obstinately costive; and he vomited frequently. Mr. Walker, the surgeon, had attended, and purgative medicine succeeded in opening the bowels, without recourse to injections. States that for some years he has worn a moustache, always washed his teeth twice a day, also his hands before taking a meal, and generally changed his clothes after working hours. On re-

covery from this attack, he returned to his work, but found he could not use the hammer (which weighed about 8 lbs.) with his right hand. This loss of power gradually increased; so that eventually he could not work at all. Last winter, after a severe cold, he lost the use of his left hand. Since Christmas he has managed to work a little, cutting small files, and therefore using less lead and also a hammer of lighter weight (3½ lbs.); but he could not strike with precision, and often his hand was so unsteady that he would miss the chisel and injure the left hand. He could write a little before this attack of paralysis; but now, although he can hold the pen, he cannot make the up and down strokes. Has only suffered from one very severe attack of colic in his life. Lately he has lost much flesh, and is now very thin. He has the characteristic blue line around the gums. The extensors of the wrist and fingers are partially paralysed, so that the hands hang down at a considerable angle with the forearm; the fingers also are flexed upon the palm, looking like claws, and cannot be completely extended. He can grasp with both hands pretty well; the arms are wasted, and the muscles flabby.

*Treatment.* Lin. ammoniæ infric. Acid. nit. dil. ℥xv.; inf. quassiæ ℥j. t. d.

*May 4th.* Since admission he has much improved, as he can now button his clothes, which he found impossible a few weeks ago. Tongue clean; appetite good; bowels regular. Slight pain in lumbar region; he suffers from headache frequently. At night the arms start and jump, just as he is dropping off to sleep.

He left the hospital improved. If he return to his trade, the disease will be certain, sooner or later, to recur.

CASE II. *Morbus Pictonum.*—Joseph Stevenson, æt. 44, married; file-cutter. Admitted under the care of Dr. Frank-Smith, March 22d, 1867. Circulatory system normal; respiratory, ditto; cutaneous, ditto. Well-marked lead-line around gums; colicky pains in abdomen at times; no marked constipation. Three years ago, while at work, was suddenly attacked with vertigo and hemiplegia of left side. Recovered under treatment after a time. Two years last September, again while at work, was attacked with vertigo, facial hemiplegia of right side, with some affection of speech, but nothing beyond an indistinctness.

On admission, he was found to drag the left leg; but he could manage to walk, although suffering considerable pain in the extremity of a neuralgic character. No loss of sensation. He also complains of much pain over the side of face. The seventh nerve is not now affected, but his speech is indistinct and thick; probably the inferior division of the fifth and the motor nerve of the tongue are affected. No anæsthesia.

Ordered the sulphate of iron mixture. The sulphide of potassium to be applied to the left arm in the form of lotion. This extremity is very slightly affected; but there is no dropped wrist.

*March* 22*d*. Acid. sulph. dil. ♏v.; ferri sulph., quinæ sulph. āā gr. j.; strychnine gr. $\frac{1}{16}$; mag. sulph. 5j.; ex aqua ℥j. t.d. Middle diet.

26*th*. Ol. ricini ℥jß; ext. bellad. gr. j.; ext. opii gr. j.: hac nocte.

27*th*. Bowels acted freely.

29*th*. Believes the left arm is stronger. Integument distinctly tinged of a bluish-black colour. The nurse states that the lint upon which the lotion was applied became dark.

*April* 5*th*. Adde misturæ acid. sulph. dil. ♏v.; sing. dosibus.

7*th*. Ferri sulph. gr. j.; quinæ sulph. gr. j.; acid. sulph. dil. ♏v.; mag. sulph. 3j.; ex aq. ℥j. t. d.

18*th*. Acid. sulph. dil. ♏x.; acid. phosph. dil. ♏v.; quinæ sulph. gr. j.; sp. chloroform. ♏x.; aq. ℥j. t. d.

26*th*. He complained for some time of cramps in the toes and fingers of the left side, and aching pain in the leg. Subcutaneous injections of morphia gr. $\frac{1}{4}$ always relieved this for a time. Appetite good; complains of acid eructations and flatulence; sleeps pretty well; walks better, but drags the left leg; tongue clean; headache. The power in the left hand seems the same as that in the right; no muscular wasting; slight thickness in speech. Says he cannot chew his food; that it slips from between his teeth. At times he cannot help laughing; at other times he feels inclined to shed tears. The blue line is not well marked.

*May* 6*th*. Improving. Appetite good. He is gaining flesh and strength.

Case III. *Morbus Pictonum*.—Robert Cartwright, æt. 31, married; file-cutter. Has worked at this trade since the age of 13. Accustomed to drink beer freely; sometimes spirits. Was very strong from 20 to 24; but since that time his health has failed. Eighteen months ago was first attacked with colic; bowels confined for a week; retention of urine. Dr. Sutton attended. Five weeks off work; second attack three months after. The present is the fifth. He says they come on every three months, each attack being worse than the former, increasing both in severity and duration. Last attack, for which he gained admission into this hospital, commenced fourteen days ago. States that injections per rectum on each previous attack succeeded better than any other treatment. Lungs healthy; heart normal. The right wrist is weak; muscles not wasted; he uses an 8-lb. hammer. Left thumb weak; he "cannot grip with it." Vomits a good deal when the colic is severe. Teeth sound; no blue line; he has always washed them carefully every day.

*Treatment on admission, April* 20*th*. Pulv. opii gr. ij.; ext. belladonnæ gr. j. statim. Ol. ricini ℥j. post horam. T. opii 3ij. pro fotu cum aqua fervente abdomini nocte. Great pain; no action on the bowels.

21*st*. Repet. pil. Ol. ricini ℥jß; ol. tiglii ♏j.; ol. terebinth. ℥ß; ex decoc. avenæ pro injectione. Bowels acted directly, but not freely; evacuation dark.

22*d.* Mag. sulph. 3j.; acid. sulph. dil. ℥v.; ferri sulph., quinæ sulph. āā gr. j.; strychnine gr. $\frac{1}{16}$; aq. menth. pip. ℥j. t. d. Pil. saponis c. opio gr. x.; o. nocte.

25*th.* Repet. mist. Potass. sulphid. 3j.; aquæ vj. pro lotione.

Since 22d the bowels have been freely opened three or four times daily. No pain; good appetite.

*May* 6*th.* Great improvement. Patient is gaining strength and flesh. Full diet.

CASE IV. *Charles Lee*, æt. 31. Admitted December 9th, discharged December 21st, 1866. Stated that he had cut files from a very early age, and that he had suffered again and again from file-cutters' colic. About a week ago he had a very severe attack of lead-colic, which had lasted more or less in severity until that day. He had been an out-patient until seen by Dr. Hall, who at once ordered him to be brought in a cab to the Hospital. On admission he was pale, and had that characteristic dirty yellow-white appearance so peculiar to file-cutters. The lower teeth were loaded with tartar; and the blue line indicative of lead-poisoning was present in a marked degree. He attempted to vomit, and brought up a small quantity of mucus. Pulse 90; skin cold and covered with perspiration. He complained of cramps and the most violent pains in the abdomen, which were not increased by pressure. The bowels had not acted for the last three or four days.

He was ordered two grains of opium and five of calomel immediately. A large mustard poultice was applied to the abdomen, and hot-water bottles to his feet. Two hours afterwards, the pain and spasms both of the intestines and abdominal muscles still continuing, he was put into a hot bath, and whilst in the bath had an injection containing 1 oz. of turpentine in a pint and a half of gruel. When in the bath, the bowels were freely evacuated, and the violent pain gradually subsided.

The subsequent treatment consisted in the administration of this draught three times a day: ℞ Magn. sulphatis 3iij.; acidi sulph. dil. aromat. ℥x.; æther. chloric. ℥xv.; inf. rosæ ℥jß. Misce; ft. haustus.

Of the men employed in the manufacture of files, it is the file-cutters who suffer more particularly from this disease, which is simply the result of poisoning by lead. It has been explained that the file rests on a bed of lead during the process of cutting, and that fine lead-dust may be seen to rise every time the chisel is struck by the hammer. The men have a foolish habit of wetting the finger and thumb with which the chisel is held by licking them; they frequently eat their meals without washing their hands—always without changing their clothes; and often the dinner is eaten in the workshop

where the files are cut,—as though fine lead-dust, handling the lead at each shifting, and licking the fingers, were not sufficiently poisonous. I have seen men in these shops, whose wives had just brought their dinners, eating with unwashed hands, and dipping the fingers, blackened and covered with fine lead-dust, into the salt used for seasoning their food. These men, as a rule, all take their dinners in the rooms where the files are cut; they never wash their hands before they get home at night—perhaps not then; and they do not change their working clothes after the labours of the day are over. A file-cutter once said to me, in reply to the remark, how foolish it was of him to sit down to his food with dirty lead-covered hands, "I have known a thousand file-cutters; but I only know one who takes the trouble to wash his hands before dinner. I never think of washing mine."

The file-cutters' disease, then, is the result of poisoning by lead, indicated by, at first, a general indisposition and loss of health and vital power; next, by violent pains in the bowels, constipation, paralysis, and dropped wrist. The lead finds its way into the system through the mouth, through the skin and through the lungs. As a poison this metal acts first on the peripheral nerves of the body, and next on the nervous centres; its chief manifestations, as seen in these poor file-cutters, being on the nerves of the intestines, producing colic; and on those of the arms, producing paralysis.

The file-cutters, after repeated attacks of lead-colic, have an appearance that enables anyone who has seen much of their disease immediately to recognise them in the street; their complexion, with its dirty, sallow, yellow-white hue, is so much like nothing else, that nothing is like it but the complexion of a fellow-workman suffering from the same disease. The dropped wrist is common, and the blue line round the gums, arising from a deposition of a sulphuret of lead, very marked. The deposit of the sulphuret of lead appears to be due either to the sulphur furnished from animal matters received into the tartar of the teeth, or to the sulpho-cyanic acid in the saliva. The lead is from the salt of that metal received into the system during the cutting of the files.

A boy was admitted into the Hospital during the past year with all the symptoms of lead-poisoning, except the blue

line. Being a file-cutter, no doubt was entertained as to the true nature of the disease. Iodide of potassium was given to him by the physician under whose care he had been admitted (Dr. Frank-Smith), and in a week the blue line appeared, and was pointed out to me by my colleague.

If formed, it is difficult to say when it will disappear; in some cases, I am inclined to think, never. I once had a file-cutter under my care who had suffered very severely in early life from lead-colic: *he had not, however, cut files, nor had he been in any way exposed to the influence of lead, for eighteen years before I was consulted; and yet the blue line was still distinctly to be seen.* On mentioning this to my friend the late Mr. Henry Jackson, senior surgeon to the Sheffield Infirmary, he showed me his notes of a case, in which he had found the blue line in a file-cutter who had suffered from lead-colic in early life, but who had not handled lead in any way for more than twenty years.

*Treatment of the File-cutters' Disease.*—Hot baths, glisters, opium, and purgatives. The best purgative mixture I have found to be the one I always prescribe in the Sheffield Public Hospital:

℞ Magn. sulphatis ℥ij.; acidi sulph. diluti aromat. ℥ij.; æther. chloric. ℥iij.; inf. rosæ ad ℥xij. Misce. ℥j. ter die.

The colic arising from lead has a great tendency to return; therefore, after the bowels have been freely evacuated, it is requisite to continue the aperient mixture for at least ten days, in many cases longer.

The iodide of potassium in full doses, in three or four ounces of water, has been recommended in chronic lead-poisoning; and at one time I was inclined to think this a valuable remedy. A more extensive experience has induced me seldom to prescribe it now.

The dropped wrist in these men is often a very difficult and troublesome complication. The hand and arm must be supported on a proper splint, and treated by rest, counter-irritation, and galvanism. M. Duchenne has pointed out, and I fully agree with him, the importance of applying galvanism, not generally to the arm, but more especially to the muscles affected; which in these cases are most commonly the

extensores digitorum, and not the lumbricales, nor interossei: hence is it, why the first phalanges only cannot be extended, whilst, when these are supported, the second and third phalanges can be voluntarily raised without difficulty. But I advise the purgative treatment to be continued for some time before galvanism is employed, and the same remark will apply to the internal use of strychnine. The tincture of nux vomica of the British pharmacopœia, in doses of from ten to fifteen minims three times a day, will be found a valuable remedy—more particularly if not exhibited too early in the treatment of the case. As tonics, the sulphate of quinia and iron will be found valuable. The best preparation of iron is the tinctura ferri sesquichloridi; a preparation, I regret to add, not to be found in the British pharmacopœia.

With regard to general treatment, our object should be to withdraw the patient from the poison, by preventing him, for a time at least, from following his occupation—that is to say, to withdraw him from the lead. It is also of the greatest importance that two suits of clothes should be provided—the one for the workshop, the other to be worn so soon as the work of the day is over. The strictest cleanliness must be observed.

The men who work in lead always find it advantageous to drink freely of *sulphuric-acid lemonade;* and wherever this beverage is taken, lead-colic is found to diminish in frequency amongst the workmen.

The prevention of lead-poisoning is very simple. The rules for the guidance of the workmen resolve themselves into cautions against the reception of this metal, or its compounds, into the body through any channel. The rules I have had printed, and to this end circulated through all the Sheffield workshops, are annexed. Where strictly followed out, the happiest results have followed.

PREVENTION OF THE FILE-CUTTERS' DISEASE.

*a.* Children should not begin to cut files at so early an age as at present (10 years old). It tends to make them feeble in body, and deprives them of the possibility of being properly educated.

*b.* Without the greatest care lead will enter the system through the skin. Common sense will therefore point out the importance of

washing the hands, arms, and face many times a day; of frequently combing and brushing the hair; and of having one set of clothes for the shop, and another to wear when out of it. The mouth ought also to be frequently rinsed with water.

*c.* The meals ought not to be taken in the workshop, and never taken without first washing the hands, arms, face, and lips, and changing the working jacket, or the poison will enter the system with the food.

*d.* On no account lick the fingers when at work.

*e.* An ori-nasal respirator worn when working would keep out much of the fine lead-dust, and consequently keep the poison from entering the air-passages.

*f.* The dress should be of coarse linen; a cap of the same material would keep the lead-dust from the hair.

*g.* The working dress and shirt should be put on when entering the shop, and both should be changed for the ordinary dress before going home.

*h.* On no pretence neglect the use of the hot and cold bath.

*i.* Attached to every large manufactory where files are cut, there ought to be a large room, supplied with hot and cold water, where the men could wash themselves and change their dress.

JOHN CHARLES HALL, M.D.

## IV. ON CERTAIN EPILEPTIC PHÆNOMENA.

So much has been written on convulsive diseases, that it would seem at first sight a waste of time and labour to touch upon a subject that has been explored by many of our best observers. Unfortunately, however, we are only very slowly approaching even a general knowledge of the subject, and the etiology of, and the first physical signs preceding, convulsion are still nearly as uncertain as is the treatment of this condition.

The common division of epileptiform attacks into centric and eccentric is itself a fallacy, although convenient in our present state of ignorance. Cases are constantly meeting us in practice, in which the first few fits could be attributed to a worm, an undigested meal, &c., and in which, the eccentric exciting cause being removed, the fit may not have recurred for a considerable time. But often enough the recurrence does take place; and as the attacks increase in frequency, we can recognise no exciting cause—there is no internal viscus, nor any portion of the skin peculiarly sensitive to extraneous impressions, and the epileptic phænomena can no longer be termed eccentric. It may be that the first starting-point of every epileptic attack is some eccentric impression, though this cannot be recognised by an observer, or even by the patient himself. The very fact that attacks are so frequent in the early morning, on first waking from deep sleep, leads to this inference, as at that period the brain seems peculiarly sensitive to external sound. But it is so difficult to prove the existence of these eccentric impressions, that practically a very large number of epileptic attacks fall under the head of centric, when the true explanation lies rather in the inadequacy of our powers of observation, or our means of research for their recognition.

In a hundred and twelve cases noted lately under my own care, the definite aura could only be traced in ten. I do not mean to assert that an aura is a necessary phænomenon in so-called eccentric epilepsy. The large number of attacks that depend upon intestinal irritation occur without any aura, just as in convulsion due to the irritation of teething; and probably the majority of afferent nerves are not sensory: but the difficulty of finding the starting-point in many cases of convulsion, joined with the fact that even a sensory starting-point may be unheeded by the patient until his attention is called to it by another person after close investigation, would be sufficient evidence against the term eccentric epilepsy; whilst in many cases, and notably in such as depend upon venereal excess or self-abuse, it is often an open question as to whether the fit owes its origin to an eccentric physical exciting cause; to a moral cause, which may also be eccentric; or simply to the circulation of vitiated blood in the nervous centres.

And yet, although the patient may seldom be aware of any sensory affection of a nerve amounting to an aura, and the physician may constantly be unable to detect any exciting cause from the periphery, or connected with any internal viscus, yet a large number of patients give an account of some sensation that warns them of the approach of the fit.

This warning differs very much from an aura, and seems often to be the commencement of the fit before the loss of consciousness occurs. This warning takes various forms, according to the portion of the nervous centres first attacked by the arterial spasm. In one case a shaking of all the limbs preceded the unconscious state; in another, a violent tremor of the whole body; in a third, in whom also a distinct aura existed in the shape of pain commencing from the bottom of the bowels and travelling upwards, a similar tremor was invariably noticed for twelve or even for twenty-four hours before the fit; in a fourth, this warning occurred in the form of vertigo for a minute or two before the fit. In this case the attack was followed by partial motor paralysis of the right hand, affecting only the flexor muscles; the extensors drew the fingers backwards almost at right angles to the hand. Another, whose attacks seemed at first to depend

upon the irritation of ascarides, had warning of the attack half an hour previously by partial trismus, which prevented her from speaking. Another is both giddy and tremulous. In this case the attempt to read a book would always induce an attack. In two others vertigo almost always gave them notice of the immediate approach of the fit. In two more the warning was by previous headache; and this is very frequently the case—the headache in such instances being, I think, anæmic, and caused by arterial spasm rather than by any deficiency in the heart's action; and therefore, although closely connected with the headache from hæmorrhage or excessive lactation, it is not under the control of the same remedies. In another case the warning was described as "a great darkness that came over her for a moment or two before she lost her senses"—a sudden and temporary amaurosis, caused by the entire cutting-off the supply of blood from the retina. Another always knew the fit was approaching by "heat coming all over the body." In this case the fit first came on after a severe scalp-wound, caused by a blow.

Another case leads us into different ground. She has no warning herself; but those about her know for twelve hours previously, from her being tiresome. May we not put down this irritability to a want of coördination in the various portions of the brain, owing probably to imperfect blood-supply to some parts? In another case the fit was always preceded by giddiness and pain behind the left ear, and was succeeded by partial and temporary paralysis of the left facial muscles.

Another gave the following account of herself: "Susan L., aged 34; has been married ten years, and has miscarried eleven times. Dark hair; light eyes. Her father suffered from fits. Had no infantile convulsions. No known cause for the fits. She knows when the attack is coming on by feeling giddy and sick, and becoming very sallow. Her first fit was when she was 22; her third during her first pregnancy. In the last three years the fits have been more frequent, occurring about once a month, generally at night. Does not bite her tongue. The fit is succeeded by headache, drowsiness, and vomiting of bile. Bowels confined. She was only three months under observation, at the beginning of which time she miscarried for the twelfth time; but during that short

period, under purgatives and bromide of potassium, she had no attacks." I know nothing of her future history. This probably was not a case of pure epilepsy; but it is mentioned for the symptoms that preceded the attack.

In another case the fit was invariably preceded by shivering. In a child, aged 7, who had had fits for twelve months, the first having occurred after a violent fright, the attack was always preceded by six or eight minutes of excessive laughter. This symptom, like the manifestations of bad temper in a former case, is probably due to a want of harmony and control between the emotional and intellectual portions of the brain, caused by partial loss of blood-supply; this loss due to the commencement of that arterial spasm which, when carried to a further degree, produces entire loss of consciousness.

In another case, in which the first attack seemed to have been excited by the patient having seen a man in a fit in church, the attack was preceded by a great shaking of both arms; and in a boy now under treatment the fit is always preceded by intense cramp in the left arm.

Most of these warnings are evidently due to local arterial spasm, either of the retinal artery, the anterior or middle cerebral arteries, or of these arteries on one side only, or of the vessels of the medulla oblongata; and the nature of the warning sensations seems to vary according as the loss of blood-supply occurs first in the anterior or the posterior portions of the encephalon.

And this leads to another interesting fact in the consideration of this subject. May not epilepsy occur without loss of consciousness? or rather may not phænomena, which we have been accustomed to look upon as epileptic, take place without that loss of intellectual power and of sensation which has generally been considered the main feature of the attack? These conditions differ much from each other, and are met with in all varieties, from convulsions with absolute clearness of intellect, to circumstances in which, with many of the cerebral symptoms of the attack, the consciousness is never entirely lost. These latter are the connecting links between this disease and true epilepsy.

Thus Mrs. A. B., aged 28, who has been ill for two years,

and has several fits in the week, states that in the attack she feels slightly confused and falls, but never loses consciousness: has some clonic convulsions of the extremities; but gives no account of tonic spasm. She does not suffer from headache and drowsiness subsequently. Her memory is beginning to be impaired.

A second case I have had under observation for more than two years.

E. P., aged 61, a widow. Every day, and many times a day, for six months before I saw her, she suffered from a severe convulsive condition. She never loses consciousness in the least, and does not even feel confused; but has most violent clonic convulsions of the mouth, jaws, eyelids, and all the facial muscles. The head is shaken from side to side with intense rapidity; the arms and hands are in a similar state of clonic convulsion. The legs are not always affected; and when they are not, she is able to stand through the whole of the attack. In all respects the convulsions of this case closely simulate epilepsy. She has no tonic spasm; no subsequent headache or drowsiness; no loss of memory, or of any mental faculty; no paralysis. She has never had any other kind of fit. The only effect of these attacks is the fatigue consequent on the violence of the convulsion. I have several times witnessed these attacks, and am certain that the mind is wholly unaffected throughout. It may be well to state that under bromide of potassium the convulsions have diminished in frequency and intensity, and for some months past have scarcely troubled her at all whilst she has persisted in the remedy. They recur as before whenever she attempts to leave it off.

A third case has its connecting links with the former one, and its points of difference.

J. P., aged 22, coal-miner, has been ill two years. Has about eight attacks in the twenty-four hours, in which there is sometimes little convulsion, sometimes a great deal; and in the latter case the attack may last fifteen minutes. He has only lost consciousness five times altogether. In this case memory was deficient; but the man reckoned well, and was sensible enough. Although he improved under treatment, there is no doubt he will become a confirmed epileptic, and

that the occasions on which he loses consciousness will increase.

Another case had the first and only fit six weeks ago. She lost consciousness, and was convulsed. Since then she has had several attacks, in which the left hand has been violently convulsed, and in which no loss of consciousness occurred.

Do not all such cases depend simply on the portion of brain affected by arterial spasm? The nervous centres that rule motion may be thus affected, whilst the external convolutions are still free; just as we see so many cases in which the latter portions of the brain are alone affected, without any interference with the nerves of motion.

This seems to be the case in those numerous instances of *le petit mal* in which loss of consciousness is the prominent symptom. This form of epilepsy owns many varieties. In some cases it is difficult even for people on the watch for the attack to recognise it in the affected individual. The patient may be eating, walking, or occupying himself in any way, and will suddenly lose consciousness for half a minute or so, with scarcely any change in his external appearance, except perhaps that there is a slight vacancy of countenance. Not only is there no convulsion, but there is not even any loss of motive power. He does not fall; he goes on eating and even walking, as it were, automatically. If he is engaging in conversation, he will cease speaking, and will lose the thread of the conversation to some extent; and if he is performing any action that requires considerable coördination of muscles, such as writing, painting, or playing on any instrument, he will not continue such movements during the momentary loss of consciousness. Many other acts that demand less combination, such as walking, he will continue to perform; but he will have no recollection of having performed them. The only account he can give of the attack is that he has lost a moment of his day, and that, although he may have felt giddy just before he lost consciousness, his memory is an entire blank as to the attack itself.

More commonly, however, the loss of consciousness is accompanied by a sudden paralysis of limbs, and the patient falls. There is, however, no tonic spasm, no clonic convul-

sion, no subsequent headache or drowsiness. Almost immediately after the patient falls consciousness is regained, and the ordinary occupations of life are resumed. This course of things may recur, as in one of my own cases, fifty times a day.

Another variety, which may be the connecting link between this form of epilepsy and the so-called epilepsia gravior, manifests itself by a sudden loss of consciousness and a fall; and these phænomena are immediately followed by some tonic spasm of the glottis, and temporary asphyxia consequent thereon. Such cases constantly suffer from headache and sleepiness after the attacks, and are only distinguishable from cases of epilepsia gravior by the absence of clonic convulsions. These cases are closely allied to what nurses call "inward convulsions" of infants, in which there is probably loss of consciousness, and very evident glottidean spasm; and, when the attack does not proceed to clonic convulsion, there may often be traced a general tremor that passes over the whole body. If the patient lives, the loss of consciousness is pretty sure sooner or later to be followed by clonic convulsions, and the attacks will become those of convulsive epilepsy; but the slighter attacks may occur alone for a number of years, as in the following case:

Harriet H., aged 19, light hair and eyes, was frightened when she was three years old, and has had attacks of *le petit mal* ever since. If she is at dinner, she will go on eating during the attack; and if she is walking, she goes on, and does not fall. Has had four severe fits with convulsions (the first when she was 15 years old), in one of which she has bitten her tongue. This case was brought to the infirmary by the mother, who stated that she was most anxious the girl should be frightened again, as she thought it might cure her; since a younger child, a boy, had been frightened at Christmas, and had had similar attacks up to September, and then was frightened again, and had had no fit since.

In one point of view it is very questionable whether these attacks of so-called epilepsia mitior should not be considered as serious as, or even more serious than, the form of epilepsy with convulsive phænomena. Perhaps in the whole history

of epilepsy there is nothing more obscure than the mental condition induced by it.

Marshall Hall endeavoured to explain all the brain-lesions by the mechanical effect on the vessels of the brain, by laryngeal spasm, and spasm of the muscles of the neck, which he styled trachelismus. He would place laryngismus as the first phænomenon, on which would depend the unconsciousness as caused by the retention of venous blood in the brain. A careful observation, however, shows that the loss of consciousness precedes in order of time any spasm of the glottis, or contraction of the muscles of the neck. But if spasm of the glottis were the first phænomenon, would it account for such a loss of consciousness as takes place in epilepsy? This loss is sudden, instantaneous, often occurring when the patient is in the midst of cheerful conversation, with all the intellectual powers in full play. The accumulation of venous blood in the brain could not give rise to such a condition. The intellectual powers would become gradually confused, the sensation gradually blunted; and instead of the patient falling suddenly from a bright intellectual life to a condition in which all mental powers and all sensations are totally in abeyance, the cerebral functions would slowly wax feebler and feebler, and at last die out altogether.

But neither laryngismus nor trachelismus occur in several forms of *le petit mal*. Not only in many cases is there no arrest of breathing, and no flushing of face and head, but there is not that subsequent headache and drowsiness that seem to exist in direct ratio with the amount of cerebral congestion in the severer fits. And yet the mental impairment in cases of epilepsia mitior is not only equal to those of the graver attacks, but is absolutely more rapid.

It is common enough, even in the ranks of our own profession, to meet with the opinion that the mental impairment is a consequence of the congestion of the cerebral vessels, induced by the fit itself. The truth is, that the fit and the mental deficiency depend on one and the same cause; the former being the immediate result of the arterial spasm, the latter the consequence of the mal-nutrition of the brain from the frequent repetition of this spasm. The condition of the brain at the commencement of the fit is precisely the same in

the two great forms of epilepsy; and the brain suffers more rapidly in the epilepsia mitior, because the attacks in this variety are much more frequent than in the other.

In those cases in which the two forms are united, the attacks of *le petit mal* may occur many times a day, and the convulsive fits only once a day, or once in a week or a month. It is comparatively common that the non-convulsive form should occur as often as once daily; whilst it is comparatively uncommon for the convulsive form to occur more frequently on the average than once in several days. So great is this difference in the frequency of the phænomena of the two forms, that we are almost tempted to look upon the cerebral congestion of those convulsive fits which are accompanied by laryngeal spasm as absolutely preservative against a very frequent repetition of such attacks. It is easy therefore to realise that the mind is more likely to become rapidly impaired when its blood-supply is cut off very frequently, than when this lesion takes place once in two or three weeks, and seldom once a day.

Having stated, then, that mental impairment has always in my own experience seemed to follow attacks of *le petit mal* more rapidly than the more convulsive forms of epilepsy, I would refer to Dr. Reynolds's work on this subject for an exhaustive statement of the relation of mental deficiency to age, sex, duration and severity of attacks, &c. Amidst all the difficulties of the subject, one point alone seems at once established and capable of explanation—viz. that impairment of the mental faculties takes place in direct ratio with the frequency of loss of consciousness.

Cases come under the notice of medical men in which, with great severity of symptoms, and tolerable frequency of attacks, the mind seems to have suffered very little. A case seen lately illustrates this in a marked manner.

A young lady, aged 28, had been subject to epileptic attacks from the age of three years. It is probable, from the uncertain history obtained of her early childhood, that these attacks commenced during the first dentition; but they were known to have troubled her for at least twenty-five years. On one occasion she had no attacks for a period of six weeks; but otherwise the fits had recurred never less often than

once in nine days, and more generally once in every two or three days. She engaged in the ordinary occupations of life, and I could not gather that even her memory was at all impaired. She hesitated a little in answering a question, as if reasoning was not such a rapid process with her as with others; but although there was this momentary delay, the answer was a good one, and the reasoning clear. Her temper, however, was uncertain; and this has always seemed to me to be in the majority of cases the first point that breaks down. How far this may depend on what we may call epileptic causes, or how far it may be induced by the restrictions necessary for the well-being of the epileptic, is perhaps open to question. The constant presence and watchfulness of another person, often a person not particularly agreeable to the patient; the being cut off from so many of the habits, so many of the associations of ordinary life; the knowledge of their own condition acquired by many chronic patients; the destruction of natural hopes and aims in being unable to marry; the restriction as to diet, hours of sleep, and many other points in daily life; with a very constant fear of becoming insane—combine to form such a body of trials and discomforts, that it is surprising the temper of epileptics does not fail far more rapidly than we find to be the case. All this should be considered before we class the infirmity of temper among the signs of mental impairment. But still, with all this, it is sometimes impossible not to reckon this moral lesion as a symptom of cerebral weakness, when we consider that it occurs in patients whose natural disposition before their illness has been extremely good and mild, and to whom the phænomena of a bad temper are peculiarly foreign; when, too, we remember that what a well-known writer has styled "temper-disease" not only merges into a form of insanity very difficult to treat, but in some cases evidently depends upon some cerebral lesion, and is quite beyond the control of moral restrictions; and, lastly, when we see ebullitions of temper taking the place of epileptic attacks. In the case above mentioned, the patient under large doses of bromide of potassium went without epileptic attacks for a period of several weeks; but during that period she had several attacks of violent bad temper. This, however, is

somewhat exceptional. The temper more usually shows itself shortly before the fit occurs, and seems often to be itself the commencement of the attack. It may depend almost wholly on the state of circulation in some portions of the cerebral hemispheres. That the temper improves after the fit is over is no proof that any morbid matter is worked off in the attack (which was the old notion of the matter), but rather that the circulation of the brain is equalised, and has returned to its normal condition. The return to good temper in the progress of an epileptic case answers to a lucid interval in an insane person. This variation of temper is by no means the only peculiarity met with in the course of epilepsy. When the attacks are numerous, the patient may sink into a fatuous state, from which, if the frequency of the fits is lessened, he may recover perfectly.

A girl, aged 26, who had had epileptic attacks for sixteen years, had on several occasions during that period fallen into a condition of torpor. Whilst in this state she would show no sign of understanding what went on around her; would talk incoherently; would move and eat and drink like an automaton, as if all power of voluntary action had left her. During this period she had several attacks of almost maniacal excitement, lasting some hours each time. This state of torpor in one instance lasted for six months, and the patient precisely resembled a person sinking into dementia. The fits, however, became less frequent, and little by little the patient regained the use of her mental faculties; recognised those around her; began to engage in her ordinary occupations; talked rationally, though evidently for a long time with a certain effort both in understanding what was said to her and in forming an answer; and eventually was fully restored to the amount of intellectual clearness she had possessed before the commencement of this condition, having lost six months out of her life, of which she could give no account whatever.

A very similar condition may be seen in several forms of insanity, especially in melancholia and acute mania, and even, contrary to all pathological considerations, in general paralysis.

Few questions are more interesting or more difficult than

the explanation of this lucid interval in those epileptics who are afflicted with some mental deficiency; and still less easy it is, perhaps, to explain this same phænomenon in the diseases, more or less cognate, that have just been mentioned.

But the answer must be found in these two facts: first, that the mental defect seems most generally to occur in direct ratio with the frequency of the attacks; and, secondly, that the nature of the attacks seems to have little influence on this loss of mental power. The question, then, is reduced to the one point that the two chief forms of epilepsy possess in common—viz. the spasm of arteries on which the loss of consciousness depends. The constant interference with the supply of blood, if repeated sufficiently often, may induce a certain degree of white softening of parts of the brain, of which some loss of mental power, varying both in intensity and kind according to the circumstances of the case, will be the natural consequence. The comparative return to mental health means nothing more than a more continued supply of blood to the brain, a less frequent interference with its nutrition, which, whilst, except in very young patients, it may never renew the softened patch, or supply the place of the diseased cells with healthy formation of cerebral tissue, will, by good nutrition to all other parts of the brain, make up for the slight deficiency by a normal and regular growth of healthy nerve-substance. It very seldom happens that a distinct patch of softening is met with in the brain of epileptics, except in cases that have been for years the inmates of asylums, and have long lost their intellectual faculties. Probably such a lesion is never to be found in the brains of those who have what we have called lucid intervals, and who after a period of torpor seem to re-awake to a comparatively healthy mental condition. But although a definite spot of softening is but seldom met with, it is not uncommon to find traces of softening, or rather of commencing fatty degeneration, in various parts of the brain. This condition has been supposed to depend on repeated congestions, the effects of the fits, by means of which an albuminous intercellular fluid is effused between the nervous filaments, that may cause first some induration, and then fatty degeneration. But the same pathological condition may be found in cases in which

the non-convulsive form of epilepsy has occurred, and in which therefore no congestion can have taken place, where this form of degeneration is produced: and constant healthy supply of blood will renew the condition of the brain to such an extent, as to cause a tolerably complete restoration of the mental powers.

Abercromby mentions several morbid appearances found in epileptic cases. These include tumour in the sella turcica compressing the optic nerves at their junction, tumour of the left parietal bone, hydatids of the choroid plexus, circumscribed abscesses, &c. Many of these morbid products, however, may be supposed to depend on the same condition of blood which predisposed to the epileptic paroxysm, and others are rather the results of the fits than their cause.

Besides these more easily recognised pathological appearances, we have in some cases the arterial dilatation mentioned by Van der Kolk, especially in connection with the origin of the hypoglossus and vagus nerves; and in a case that died at the Bristol Infirmary there was the so-called amyloid degeneration of both corpora olivaria.

But although the theory of arterial spasm has been a great gain in explanation of the phænomena of the attacks both of the immediate loss of consciousness, and of the consequent mental impairment, it only carries us one step further back in determining the causation of epilepsy. That which induces this arterial spasm, or rather that which causes the impressibility of the sympathetic nervous filaments which rule the calibre of the arteries, must be the condition of the blood itself. It is from the blood that all tissues derive the plasma for growth and change, and through the blood alone all remedies are brought to bear upon a diseased part.

A morbid condition of this fluid will induce morbid mental phænomena, entirely independent of any arterial spasm, or interference with its full supply. The observation of the many various forms of delirium teaches this most distinctly, that whilst some forms of delirium may depend upon a diminished supply of blood, a large number own as their cause the circulation of a blood more or less diseased.

More than thirteen years ago, a writer in the *Lancet*

(December 3d, 1853), Mr. Harding, made the following remarks: "The irregular muscular action of chorea has ever been regarded as connected with debility; the bloodless aspect in catalepsy bespeaks too plainly a poverty in life; the unsuccessful management of epilepsy by depletion led inquiring minds to investigate its pathology, and it is now looked upon as connected with a deficiency, not with an increase, in the amount of stimulus supplied by the blood. The convulsions of young children occur in weakly, not in strong subjects; and though the pulse may be quickened, and congestion take place during the paroxysm sufficient to justify the application of the leech, it is essentially a disease of irritation as distinguished from inflammation. If I may be allowed to pursue this reasoning further, let me mention the cramps which take place in elderly people, and where the diminished energy of the digestive power almost forbids the late and hearty meal. Again, the far more powerful and fearful cramp of cholera seems to commence and increase with exhaustion, when the blood has been drained of its watery particles by enormous discharges from the alimentary canal; and, finally, the last act of the muscles commences when exhaustion can proceed no more, assuming the cadaveric rigidity of structure when the vital spark has fled."

In my own experience of this disease, the patients attacked are seldom the strong, healthy, and full-blooded, but rather the spanæmic, those with deficient force of circulation, those with some hereditary taint, which may develop itself in rachitis, in tubercle, in mania, in hysteria.

We see convulsion occurring during the incubation of measles, scarlatina, typhus, gout; and by the subsequent symptoms we recognise that a poison has been circulating in the blood. We see similar phænomena manifesting themselves in urinæmia, or where the blood has been rendered poor and deficient in red globules by the practice of onanism (though perhaps the causation of convulsion in the latter case is somewhat more complex). Is it not, therefore, in accordance with all analogy to look upon the blood in true epilepsy as the origin of the evil, even though it may not be easy to recognise the precise lesion in this fluid? I think the results of treatment are sufficient proof, not only that the blood is

the seat of the disease, but also that the lesion of the blood varies in different individuals.

There is some objection to the view that clonic convulsions depend on the asphyxia, and the accumulation of black blood in the encephalon and spinal cord.

Brown-Séquard founded these views on some experiments in which clonic convulsions were set up by injecting venous blood into the system. It seems, however, more than doubtful whether these experiments bear out his conclusions. For instance, in Kusmaul and Tenner's experiments, the prevention of the entrance of red blood into the brain, when the veins were left perfectly free, induced most violent convulsions. Again, in an animal bled to death, and in which, therefore, no accumulation of black blood can have existed, the uterus expelled its contents precisely in the same manner as in an animal into which venous blood had been injected. It would seem, therefore, more accurate to hold that clonic convulsions depend on the want of arterial blood in the spinal cord and medulla oblongata, caused partly by the further extension of the first excitation (contraction of arteries), and partly by the asphyxia inducing a condition of venosity through the whole system.

It may also be open to question whether the cessation of the convulsion depends on exhaustion of nervous power. If the view is correct, that the clonic convulsions are induced by a want of arterial blood, their cessation would be the consequence of a restored supply of this blood. The convulsion thus would be an evidence of want of nervous action, and its cessation would be consequent on a restored nervous action.

If it is allowed that the loss of consciousness is occasioned by arterial spasm in the cerebral lobes, and the tonic rigidity and clonic convulsions are the consequence of an arterial spasm, similar in kind if not in degree, in the medulla oblongata and spinal cord, it is difficult to believe that in the first case the function of the part is temporarily annihilated, whilst in the second it is intensely exalted. It is scarcely reasonable to suppose that the same condition which, when acting on the brain, causes destruction of all cerebral functions, should, when acting on the spinal cord, cause an intense

exaltation of the spinal function; nor can we believe that a fresh supply of arterial blood, which, acting on the brain, causes it to resume its functions, would, when acting on the spinal cord, almost in a similar ratio, lower and depress the functions of this nerve-centre.

In illustration of the theory that clonic convulsion may be the consequence, not of excitation of a nervous centre by venous blood, but rather a manifestation of diminished supply of arterial blood, I would mention an experiment performed by Vulpian, and recorded in his *Leçons sur la Physiologie du Système Nerveux*, page 455: "J'ai vu, chez un lapin, la compression des artères carotides et vertébrales déterminer une suspension des fonctions encéphaliques; mais, chose bien remarquable, la respiration spontanée continuait, le bulbe rachidien ayant échappé plus ou moins complétement à l'anémie encéphalique. Les mouvements spontanés et réflexes avaient entièrement disparu dans la face et les yeux; le tronc de l'animal vivait encore en supportant une tête physiologiquement morte. Eh bien, au bout de deux ou trois minutes, les moyens de compression ayant été enlevés, il se produisit d'abord des mouvements convulsifs assez violents, qui ne durèrent que peu de temps; puis toutes les manifestations de la vie, tous les mouvements volontaires et autres reparurent peu à peu dans la tête; l'animal recommença à marcher, et revint bientôt à son état normal."

Here the convulsions were the connecting link between apparent death or paralysis of the muscles of the head and face, and their restoration to voluntary movement. Entire loss of arterial blood from the part was followed by loss of all movement; the very commencement of restored arterial flow was followed by convulsion before the full circulation was restored; and a full restoration of arterial circulation was the immediate precursor of normal life in the part.

Again, the explanation of these convulsive conditions, which simulate epilepsy but without loss of consciousness, seems peculiarly difficult if we accept the theory that the accumulation of venous blood at the base of the brain is necessary for their production. In the second case of this kind mentioned in this paper, that of E. P., the patient seemed to have no stage of tonic spasm preceding the clonic

convulsion. Neither was there the slightest headache or sleepiness following the attacks, the extent of which is a fair test of the amount of venous congestion in the brain. From a condition of ordinary healthy life she was wont to be taken with the intense clonic convulsion previously described, and the moment the convulsions ceased she was herself again. The observation of all such cases seems to point to partial arterial spasm of the spinal cord as the proximate cause of the convulsion.

Several cases of a similar nature are collected from various sources in Dr. Reynold's work on epilepsy. It is true enough that some tonic spasm may exist and yet be very difficult of detection, and Trousseau would seem to look upon its non-existence as an impossibility. He says: "The tonic always precedes the clonic stage; but the duration and violence of the latter are by no means proportionate to the duration and violence of the former. Thus, very violent clonic movements often succeed a slight tonic contraction, and reciprocally an excessively powerful tonic contraction may be succeeded by very moderate clonic movements. Thus the length of the first stage is sometimes so short, and the second stage comes on so quickly, lasting for a more or less prolonged period, that an observer who is not on his guard, or not very attentive, might think that the convulsions were clonic at the outset. . . . . From what I have said, this remarkable fact follows, that rigidity seems to be an essential obligatory element of all convulsion. It is never absent, and can even be alone present, whether it constitutes the convulsion by itself, as in idiopathic contractions, or whether the convulsion is incomplete, as in eclampsia, where the clonic stage is absent, whereas clonic movements never perhaps come on from the first."

This is a strong statement. In the case before mentioned the woman has more than once been talking to me in the out-patient room when the first symptoms of the attack have commenced in rapid twitchings of the facial muscles, followed immediately by clonic convulsion of the limbs; and with the first twitching she has said, "Now, sir, my fit is coming on."

It is difficult to conceive how any person could speak with any laryngeal spasm sufficient to cause cerebral congestion;

and if this venous-blood theory be right, how is it that the tonic spasm and the clonic convulsion do not bear a direct ratio to each other? A slight tonic stage should be followed by slight clonic convulsion, instead of the two stages bearing, as they often do, almost an inverse proportion to each other. How, too, can the period of rigidity exist by itself, unfollowed, as it sometimes is, by clonic convulsion?

I would therefore repeat my belief that clonic convulsion is an evidence of partial arterial spasm at the base of the brain and in the spinal cord; that it plays no part in the causation of the subsequent headache and sopor, except by sometimes adding the element of exhaustion, when the convulsion has been very intense and protracted; and that when such convulsion has followed the injection of venous blood, it has been from this venous blood inducing contraction of the arteries, as the blood in the exanthemata sometimes does.

It is a very practical matter to seek to understand the causation of the several phænomena in an epileptiform attack, as it is only by this knowledge we can hope rightly to apply therapeutical remedies.

It is a great step in the right direction to recognise arterial spasm as the cause on which many of the chief phænomena depend, and to realise under how many different conditions this impressibility of the sympathetic nerves may manifest itself.

Perhaps it is unscientific even to hope for any specific for epilepsy. But even now scarcely a year passes without some remedy being cried up as a sure means of cure for this formidable disease.

Depletion has long held in the treatment of epilepsy that dominant position which of late years it has lost in other diseases. Anti-spasmodics, the modus operandi of which is so little understood, are used exclusively by some, whilst others take delight in several drugs of the narcotic family. The oxide, sulphate, and valerianate of zinc have been spoken of as specifics by Herpin and others, but have constantly failed in my hands.

Several observers have noticed epileptiform convulsions depending on malarious infection; and the fact that they may

do so should make us careful of the hygienic conditions in which our patients live.

The main points in treatment are twofold: first to improve the condition of the blood itself. It is useless to lay down special directions on a subject so varying as this, in which perhaps each individual case will require treatment different from what is necessary for any other case. But the epileptic is often atonic. The clammy hands, the sluggish expression of eye, the languid circulation, the diminished energy either of action or of thought, or of both, are all evidences that the healthy constituents of arterial blood are not present in many cases in their normal quantity and proportion.

Even those instances mentioned by some authors, in which plethora has seemed to be the cause of the attacks, are scarcely exceptions to this rule, inasmuch as plethora may itself prevent the due assimilation by tissues of nutritive material, the proper interchange between the blood and the parts it is meant to nourish.

In my own practice I have met with good results from long courses of quinine, in cases in which no malarious influence could be traced. In several instances steel and strychnia have proved very beneficial; whilst in three others phosphoric acid and phosphate of iron have been attended with good results, where other means had failed to give relief.

But whilst by all hygienic means, by food, by good habits of life, by various remedies, we are endeavouring to fulfil this primary indication of rendering the blood more healthy, it is wise to seek, and to seek with hope, for something that may modify the impressibility of the arteries themselves or of their nerves.

During the last few years I have tried, in common with many of the profession, belladonna and the bromide of potassium.

There are perhaps few complaints that are less satisfactory to treat in hospital practice than the one we are considering, patients in whom the convulsive attacks become much modified are so apt to discontinue their regular attendance. Still I find a note more or less complete of fifty-two cases in which bromide of potassium in at least twenty-grain doses has been

found satisfactory. In many cases it has been given with cod-liver oil. I believe that its chief action is the prevention of the tendency to arterial spasm; and in infantile convulsions, when the spasms persist after the removal of this apparent exciting cause, I have found it extremely useful.

I have notes, however, of ten cases in which the bromide failed wholly, in one of which belladonna was more successful.

From this latter remedy my own results have not been very encouraging. In a few instances it has in conjunction with tonics seemed to be very beneficial, but in many cases it has failed altogether. Judging by the good results obtained from it by several physicians in pertussis, it ought theoretically to prove of far greater service to us than it does.

In closing this paper it may be convenient to state the points to which attention may be called.

1. In very many cases, what the patient calls a warning of the fit is in reality the commencement of the fit itself.

2. Epileptiform convulsions may occur without any loss of consciousness, where there is no evidence of organic disease or of eccentric irritation.

3. The brain suffers more rapidly in the various forms of *le petit mal* than in any other variety of epilepsy.

4. Arterial spasm is the proximate cause of most of the epileptic phænomena, including clonic convulsion.

5. Spasm of the arteries of the cerebral lobes is the cause of much of the mental impairment met with in this disease.

6. Lucid intervals may occur, dependent on a more constant blood-supply in the brain.

7. The pathological appearances met with in the brains of epileptics are the effects of the attacks.

8. The blood is the true seat of lesion.

9. Treatment should be directed to the improvement of the blood, and the relaxation of arterial spasm.

EDWARD FOX, M.D.

## V. ENCEPHALOID DISEASE OF A RETAINED TESTICLE;

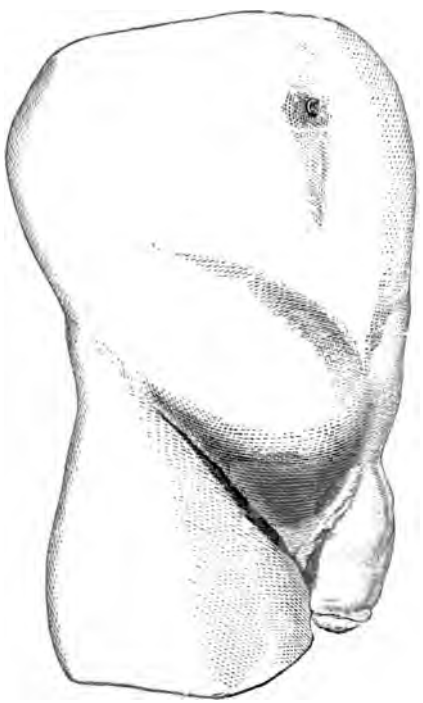
### WITH REMARKS, INCLUDING A SUMMARY OF TWELVE OTHER SIMILAR CASES.

THE subject of this case (a country draper, aged thirty-four at the time of his decease) first came under my notice about nine years ago (in the autumn of 1857), when he was confined to his bed with a painful and tender tumour in the right groin, much the size and shape of a hen's egg, upon which two surgeons were arranging to operate, under the belief that it was a strangulated inguinal hernia, which, notwithstanding three days' treatment by taxis, ice, &c., they had failed to reduce. Most of the symptoms of strangulated hernia were, however, absent, as was also the right testicle from the scrotum. There was no anxiety of countenance, nor sickness, nor abdominal pain, and the pulse, tongue, and appetite were normal. Moreover, a careful examination of the swelling showed that it was merely the right testicle arrested in its descent, and inflamed a little in consequence of a squeeze which the patient had given it a few days previously, whilst stooping to lift a heavy weight from the ground. The next day the patient was up and about, and in a few days more the pain and swelling had entirely subsided, leaving only a naturally-sized testicle (rather a small one) in the right inguinal canal.

During the next six years the man suffered no inconvenience, except on two occasions, when, from some awkwardness, he again got the testicle squeezed, which led to swelling and pain as before, for which he consulted me. Rest and soothing applications sufficed in a few days to dispel these.

In September 1863 he came to me afresh, and this time

with a swelling the size of one's fist, not painful, but evidently a chronic growth, and partly containing fluid — in fact, a hydro-sarcocele in the groin. With a small trocar about six ounces of straw-coloured fluid were drawn off, leaving a solid irregular mass, about four or five times the size of a healthy testicle, which gave no inconvenience except by its bulk. Some six months were now spent in endeavouring to promote absorption of this by potash and iodide of potassium internally, and discutient lotions externally, with an occasional tapping. The tumour having, however, rather increased than otherwise under this treatment, Mr. Paget was consulted. He pronounced it malignant, and advised its removal by operation. Its condition at this time is shown by Fig. 1.* It was very movable,



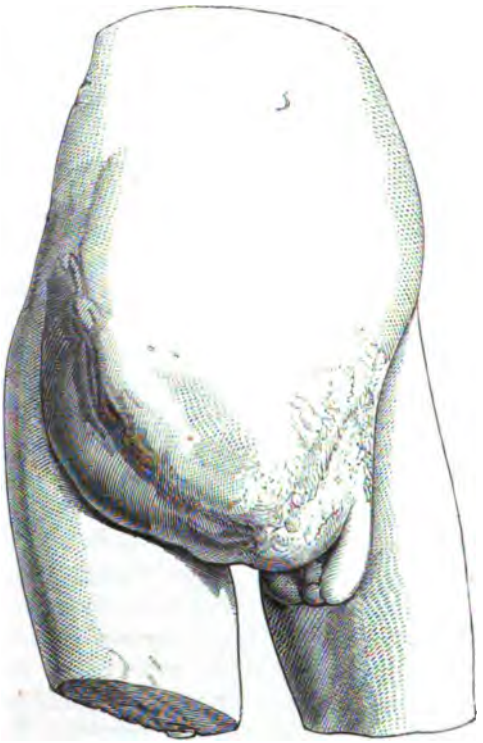
* Fig. 1. Encephaloid disease of the right testicle retained in the groin, of about 10 months' growth; copied from a photograph taken from this cast.

and pretty easily circumscribed, the least so in the direction of the cord. The patient objected to the operation, and then ceased to consult me.

In about eighteen months (September 1865) he again applied, by which time the tumour had attained a large increase in size, amounting in the mass to four pounds weight probably, and offering at its front and lower part some decided fluctuation. On this being tapped, twenty ounces of straw-coloured fluid, with a good deal of cholesterine floating in it, escaped. The sac refilled during the next twenty-four hours. A few days subsequently the patient bruised the tumour by accidentally squeezing it against the edge of his counter, and thereby caused ecchymosis, and an increase of swelling and of pain; and as from the tension (in part, at least, as it seemed) he had for some weeks past suffered so much pain at night as to require strong opiates, by the advice of Mr. Pollock (whom he consulted at this juncture) I passed a stout silver wire through the sac, and left it in as a seton. On this occasion the fluid was sanious, doubtless from the bruise. As excision of the mass now seemed unjustifiable, remedies (iron, cod-liver oil, and generous diet) were once more prescribed for the general health, which to a considerable extent succeeded, enabling the patient to get about again. His appetite and nights' rest also became good, and the relief derived from the constant drain promoted by the seton admitted of opiates being dispensed with. Still the tumour steadily enlarged, especially upwards and towards the median line; the skin became more adherent to it and more dusky in hue, and the superficial veins more conspicuous; the right leg, especially the thigh, became œdematous; and altogether the appearances were such as to confirm the opinion of its being of a cancerous nature. The patient now rapidly declined, his sufferings again requiring full opiates, until death finally relieved him, 26th July 1866, about three years from the time when the malignant deposit may be considered to have commenced. The silver wire had been removed a couple of months before death. The upper opening made by it soon healed, the lower sufficed for an oozing of serous discharge (doubtless to the patient's relief); but no ulceration or sprouting of the tumour occurred, al-

though, had life been prolonged only a few weeks, I think that the skin must have given way over one or more of the protuberances observable on its surface. It had reached nearly to the opposite groin (pushing the œdematous penis before it), and a good way up towards the umbilicus, and would probably weigh seven or eight pounds.

The larger model* was taken the day after death, just



previously to a dissection. On division, the mass closely

* Fig. 2. Encephaloid disease of the right testicle retained in the groin, of three years' duration; copied from a photograph of this model, kindly taken for me by Dr. Dawson. Both models are now in the Pathological Museum of St. George's Hospital.

resembled in colour and consistence very soft brain, none of the original gland being detectable. It had implicated the lower portion of the great omentum and the lumbar glands. The liver, spleen, and kidneys appeared unaffected.

In consequence of the autopsy taking place at the man's home in the country, I had not an opportunity of using the microscope until the next day; by which time (the weather being hot) my specimen was so utterly decomposed as to render it useless. But, as Mr. Curling observed (for he saw the man a few months prior to his death), "this was of but little consequence, as there could be no reasonable doubt of the malignant nature of the growth."

There was no family history of a cancerous tendency. The father died of phthisis, and the mother of bronchitis. The father and most of his children (including this son) were, or are, cachectic-looking.

This man got married about eighteen months before his death; and succeeded for many months—notwithstanding the presence of this large growth in his groin—in accomplishing congress to his satisfaction; at least so he informed me. His wife did not become pregnant, although his left testicle seemed normal in situation, size, &c.

In reviewing this case with the object of trying to decide whether a more successful mode of practice could be adopted in another such, mainly the question of removal of the tumour presents itself—either at a time prior to the supervention of cancerous deposit, or afterwards. It will, perhaps, be best to consider the latter point first. The clinical history of this class of cases, when at all advanced, does not encourage us to operate, so far as I can learn from the records of eleven other such cases. Two of these are contributed from Italy;* one from Germany;† one by Mr. Pott,‡ formerly surgeon to St. Bartholomew's Hospital; one by Mr. Arnott,§ of the Middlesex Hospital; another by Mr. Storks,‖ of Gower-street, London; one by Mr. Michell Clarke,¶ of Bristol; an eighth by Dr. Fayrer,**

* Quoted in Curling *On the Testis.*

† Ibid.

‡ Case iii. in his Chirurgical Works.

§ *Med.-Chir. Trans.* vol. xxx.

‖ *London Med. Gaz.* Jan. 15, 1847.

¶ *Brit. Med. Jour.* May 13, 1865.

** *Edin. Med. Jour.* March 1863.

of the Calcutta Hospital; the ninth and tenth are quoted by Mr. Arnott,* one of them as having occurred at St. Bartholomew's, and the other as having been communicated to him by Mr. Joseph Hodgson (then of Birmingham); and, lastly, in the lower Museum of the Sussex county hospital is a cast representing a tumour of this kind in the right groin of a man who was a patient there about the year 1835, under the late Mr. Blaker's care. In eight of the cases the tumour was excised; in the German case and in one of the Italian cases the condition of the parts requiring the operation to be extended to the peritonæum. Six of these (including the two in which the peritonæum was involved) recovered from the actual operation; but subsequently four of them died, at dates varying from two months to two years, by a return of the disease in the cicatrix or by its development in the lumbar glands or the mesentery. The result of one of the Italian operations is not recorded at all; and the final result of two of the others is not given, as Mr. Pott seems to have heard no further than that the operation was successfully done at St. George's Hospital (whither the man had gone from St. Bartholomew's), and Dr. Fayrer of Calcutta reported his case immediately after recovery from the operation. Mr. Arnott's patient was convalescing from the operation; but died fifteen days after it, from erysipelas of the head and face. A post-mortem examination revealed the existence of a small cancerous deposit in the cord just within the internal ring, and a much larger one in the root of the mesentery. The three other cases all proved fatal without operation, the St. Bartholomew's Hospital one by extension of the disease to the mesenteric glands, &c.; the Birmingham one Mr. Hodgson was not permitted to examine after death; and the one at the Brighton Hospital (as I am informed by Mr. Furner, who was then house-surgeon) by extension of the disease within the abdomen.† A case sufficiently similar to the above is worth adding here.

* Lib. cit.

† Several of the above cases are alluded to in Curling *On Diseases of the Testis;* and in his last edition (1866) is still another one, quoted from the *Lancet* of June 20, 1857. It occurred in a sailor, aged 28, who had always been conscious of the right testicle being in the groin, but had never suffered any inconvenience from it until during the last two years previously

Dr. George Johnson narrates* that a literary gentleman, who had no testicle in the right side of his scrotum, was the victim of a painful tumour, which, commencing very insidiously in the abdomen just within the right internal ring, ultimately spread up to the epigastrium, and killed him in nine months. It was a medullary sarcoma of the hidden testicle, and weighed sixteen pounds.

This summary of exactly a dozen cases is such, I think, as to *deter* us from operating when the disease has attained to any considerable size, especially if the peritonæum would have to be opened, unless indeed "by particular request" of the patient.

If, however, I should again see a case *early*, I *would* operate, as I am much inclined to agree in the now growing opinion—(especially promulgated by Velpeau, Dr. Hughes Bennett, and Mr. Moore of the Middlesex Hospital)—in reference to surgical cancer in general, viz. that it is not of necessity a fatal disease, but, if excised early and freely in well-selected cases, and the constitutional health also be attended to, offers at least some prospect of permanent cure.

The other question—the propriety, or otherwise, of removing a testicle arrested in the groin, and as yet under no suspicion of being cancerous—may, at first sight, seem to admit of only a negative answer. Accumulated evidence concerning organs so circumstanced seems, however, to say that such a proceeding might be far from bad practice. Numerous ably-conducted dissections, by different men, concur to show that an arrest in the descent of testicles is, *as a rule*, only a part of a general arrest in their development; most of them being small and imperfect in structure, and their secretion devoid of spermatozoa, and some of them wanting the epididymis and vas deferens. In the spermatic fluid of nine living men who were cryptorchids, and whose cases are given by Mr. Curling in an interesting paper on "Ste-

to consulting Mr. Spry, surgeon to the Royal Cornwall Infirmary, about it, when it had attained a considerable size. Mr. Spry excised it, and the man left the infirmary six weeks afterwards with the wound quite healed. The tumour was examined by Mr. Paget, and afterwards deposited in the Museum of the Royal College of Surgeons of England.

* *Med.-Chir. Trans.* vol. xlii.

rility in Man," in the *Brit. and For. Med.-Chir. Review* for April 1864, he failed in every instance, with a most careful microscopic examination, to find spermatozoa. Similar dissections of dead, and examinations of the sperm of living, horses and dogs who had no visible testicles, have given the same results. Many of such individuals, both biped and quadruped, have been known to be amorously inclined, and even capable of copulating, but very rarely indeed of fecundating; the few instances which have been recorded to the contrary having seldom been well substantiated. Even Mr. Cock's remarkable case* is open to suspicion, as the man was a potman and a dissolute fellow, and his word therefore scarcely to be depended upon; but he had the reputation of having had children by two wives, and of having seduced the barmaid and made love to the landlady.

Finally, then, as these testicles can, as a rule, be of no use; as Paget's and Virchow's pathological declarations—"that they are, from the fact of their imperfect development, very prone to cancer"—are considerably corroborated by the cases given above; and as a testicle situated in the inguinal canal, if attacked by gonorrhœal, syphilitic, or even ordinary inflammation (to the last of which it would be very subject from squeezes or blows), would be much more painfully circumstanced than if so affected in its more natural position in the scrotum, I have come to the conclusion that if the gland could neither be brought into the scrotum, nor be repulsed into the belly, and be kept there by a truss (neither of which would be very likely), I should be quite justified in advising a patient, if the organ gave him trouble during exercise, &c., to part with it altogether; more especially if his other testicle were in a standard condition.

G. F. HODGSON.

* Communicated to Mr. Curling.

# VI. THERMOMETRICAL OBSERVATIONS IN TYPHOID FEVER.

In a previous paper on a typhus epidemic an attempt was made to show that the crisis in typhus occurred during that epidemic with considerable regularity, and the advantages gained by the use of the thermometer in that form of disease were discusssed, and, it is hoped, established to some extent. Subsequent observations on solitary cases of typhus have materially tended to confirm the opinions advanced in that paper, and the superiority that the thermograph affords in estimating the course of the fever over other methods of registration has been maintained. The following remarks refer to the use of the instrument in cases of enteric or typhoid fever, and the observations on which they are based extend over a period of three years, and were made from forty-seven cases.

To those who are conversant with Professor Wunderlich's researches on this subject, these remarks will, it is feared, present little that is novel; but some interest may attach to them from their confirming the observations already made in another country and at other times.

When a new method of investigating disease is introduced to the notice of the student, it undergoes some risk of being overrated if it prove of any value; and it requires the test of time before its proper place can be assigned to it. With reference to the use of the thermometer in typhoid fever, it must be observed that in many cases the range of temperature does not serve to eliminate this disease from some others; but there are some interesting peculiarities observed by the thermometer during its course which give it a place of its own; and dangers of complication may be thus detected which are liable to be overlooked by the ordinary means of registering symptoms.

It requires, however, much care and repeated observations of ordinary and extraordinary courses of typhoid fever before confidence is placed in the indications afforded by the ther-

mometer. A careless or inexperienced observer is more likely to be at fault in a case of typhoid than of typhus; and this arises from the characteristic symptoms of the former, its course being marked by frequent diarrhœa and occasional hæmorrhage.

These symptoms materially affect the heat of the body, and decrease of temperature is not always a favourable sign, nor is a rapid fall symptomatic only of a crisis.

The increase of temperature at night, which seems to be distinctive of those diseases which are generally included under the term 'fevers,' distinguishes typhoid fever from inflammatory forms of disease which are sometimes liable to be confounded with it during the first stage of illness. It seldom happens that a case is seen during the first days of incubation, patients being generally sent into hospital at the end of the first week. The earliest day on which observations were made was the fourth, and the temperature was found on this day to reach 102° Fahr.

It may be as well to say that the times of observation referred to are between 9 and 9.30 A.M. for the morning temperature, and 6 P.M. for the evening. The thermometer was always placed in the axilla. As a rule the nocturnal increase of temperature is very considerable in typhoid fever, and amounts to two degrees, or to two and a half. During the latter half of the first week the temperature increases day by day, and varies between 102° and 103° in the morning, and 104° or even 105° in the evening. These high temperatures are quite sufficient to distinguish the form of disease from tubercular meningitis, for example, or from peritonitis, these diseases seldom showing much increase over 102° Fahr.

Mild cases are sometimes met with in which the temperature of the first week does not rise above 100°: in such cases the thermometer does not afford much clue to the real nature of the disease. Of this kind of fever, indeed, the varieties are numerous, and from the variations that are observed may it not be inferred that the amount or strength of the specific poison is not the same in all cases? Certainly, if the amount of local mischief which characterises this disease is at all proportionate to the amount of poison received, the dose must vary considerably. These variations are a remarkable feature in

this form of fever; and if this supposition be true, it presents an additional point of distinction between typhoid and typhus fevers; for the duration of the latter seems to depend on a definite and regular disturbance, produced by the presence of the peculiar poison, whatever the dose of that poison be.

During the second week of typhoid, the temperature varies between 102° in the morning and 103° and 104° in the evening, the oscillations being influenced by the amount of diarrhœa. The thermometer does not enable one to say, by a longer prediction than twenty-four or forty-eight hours, whether the case is likely to be fatal or not, but indications are afforded by its use which are not recognised by other means. The course of the fever may have reached a period when ulceration of the bowels is to be apprehended; a steady rise in the temperature will often indicate the danger, and it is quite possible to predict the intestinal lesion twenty-four hours before it is rendered evident by the ordinary symptoms of severe diarrhœa and hæmorrhage. It may be urged that the prediction of such an event, so common in this form of fever, is likely to be fulfilled in any case; but instances have come under notice where the patient was looked upon as progressing favourably, the contradiction to this opinion having been given only by the thermometer;—but more weight will attach to an example of such a case than to the mere expression of opinion; and the following instance is to the point:

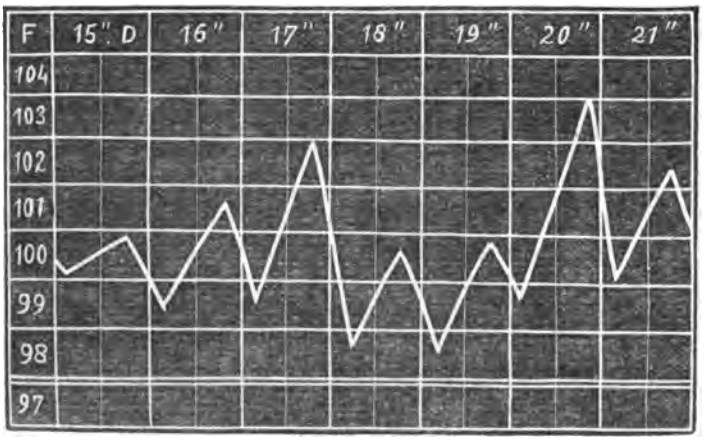
A man was admitted with well-marked typhoid fever; he had been ill about two weeks; a few large isolated typhoid spots were found on his chest. He was admitted with a dry brown tongue, a pulse of 104, a temperature of 102°. Brandy was given with benefit; and on the following day his tongue was moister, and he was supposed to be and had all the appearance of progressing favourably. The temperature, however, continued to rise from 103° to 103½°, the pulse remaining throughout (about) 96. Towards evening diarrhœa came on with some severity, was aggravated on the following morning, and blood was found in the stools.

Should the case be a mild one, a favourable crisis, or, to speak more accurately, lysis, may take place about the middle of the second week. It has been observed on the eleventh day, in a case where the temperature was high during the

first week. More often, perhaps, the crisis is deferred to the middle of the third week, but in fact it observes no regular day, as typhus does.

The mode of termination is a remarkable characteristic of this fever; the crisis does not take place by a steady and rapid fall from fever to convalescence, but is extended over a period of days, and takes place gradually. It is shown by extraordinary oscillations which take place in the mercurial column between morning and evening; the difference between the temperature of the morning and evening observations has amounted to as much as nine degrees Fahrenheit, and frequently it has been four or five degrees. This is the feature by which the thermograph of a case of typhoid fever may be especially distinguished from that of other diseases, and it forms another point of difference between typhoid and typhus fevers. The sudden extinction of a fever-poison is more readily imagined and is more intelligible than this gradual arrest and development of heat, as the strength of the poison is becoming exhausted.

In some cases, a short crisis of this kind may be observed, lasting only for a day or two; to be followed by increased fever, diarrhœa, and a second crisis. The explanation of these phænomena seems to be, that a new tract of bowel becomes involved, and the usual course of this intestinal affection is observed: the interval between the two crises is sometimes short, as in the accompanying illustration:

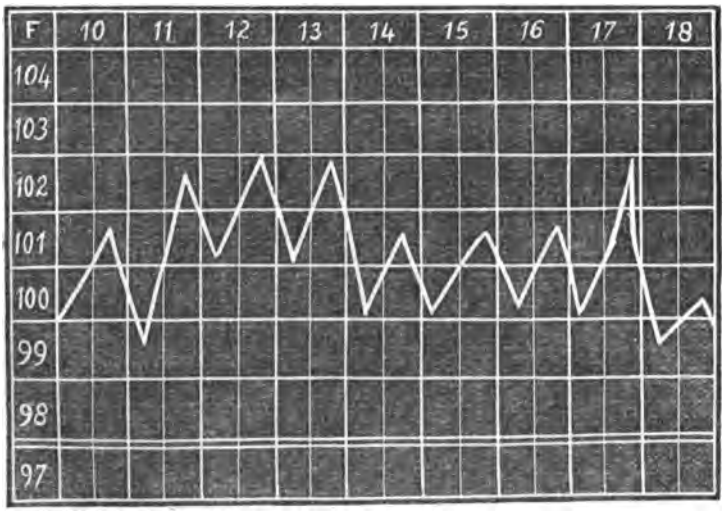


In other cases a more complete convalescence is established, and some days intervene before the fresh implication of the bowel, which in this case constitutes a true relapse. It so happens that though few cases of enteric fever have been admitted during the first four months of 1867, four cases have been subject to such relapses, one having had two relapses, with a fatal termination.

In uncomplicated cases of renal disease, the thermometer, as a rule, registers a temperature below the normal standard of health (and this decrease can afford the means of distinguishing an acute attack of granular degeneration of the kidneys from an attack of fever). The following case illustrates the thermograph found in a case of typhoid fever complicated by renal disease:

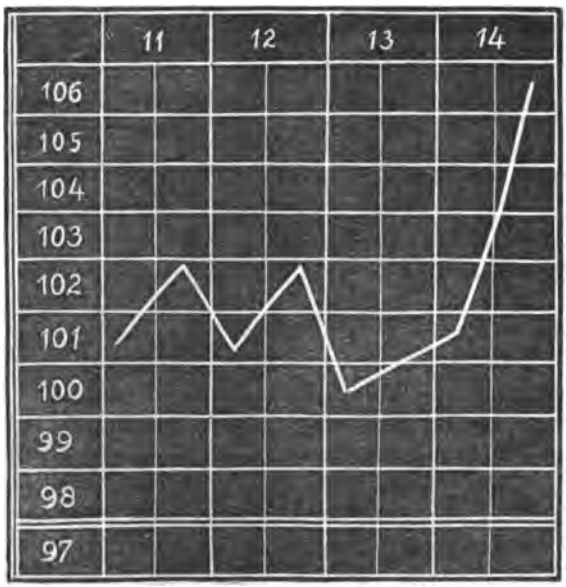
A young man (æt. 22) who had been admitted in December with dropsy and albuminaria of nine months' date, was subsequently readmitted in the following March with well-marked symptoms of typhoid fever of ten days' date.

Subjoined are the observations made on this case during the course of the typhoid fever. The man was subsequently attacked by scarlet fever; acute nephritis was superadded to the former disease of the kidneys; and he died from rapid effusion into the pleura.



I have only observations of one case where perforation of the bowel took place. This was preceded by hæmorrhage from the bowel, which reduced the heat of the body from 102° to 99·5°; but from this (a morning temperature) the mercury showed a steady rise to 102·2°, where it remained for forty-eight hours preceding death, during which period perforation took place, it is impossible to say exactly at what hour. After death the intestine was found to be perforated, and peritonitis had ensued. During the whole of this time there was no alteration in the pulse from the time that the hæmorrhage was observed.

There is a variety of enteric fever to which Cruveilhier gave the name of *forme pustuleuse*, where the solitary glands are principally affected, and which is rare as compared with the usual form of the fever. Indeed, though it is not very uncommon to meet with cases where the two forms of lesion, viz. of the solitary and of Peyer's glands, coexist, it is certainly rare to meet with cases where the solitary glands only are affected. One such case has been observed, and the following were the notes taken:



A man (aged 40) was admitted in the eleventh day of fever. Diarrhœa had been an early symptom, but at the date of its first appearance was not established. During the progress of the fever he was very troublesome and delirious; the motions, which were occasionally passed, frequently were very light, and resembled pea-soup; no spots were discovered on the body. He died on the fourteenth day of the fever, after a severe attack of diarrhœa.

The point of interest in these scanty observations is, that though death was ushered in by severe diarrhœa, the temperature was very much increased at the time of death.

The conclusions that the observations made with the thermometer in cases of typhoid fever lead me to draw are the following:

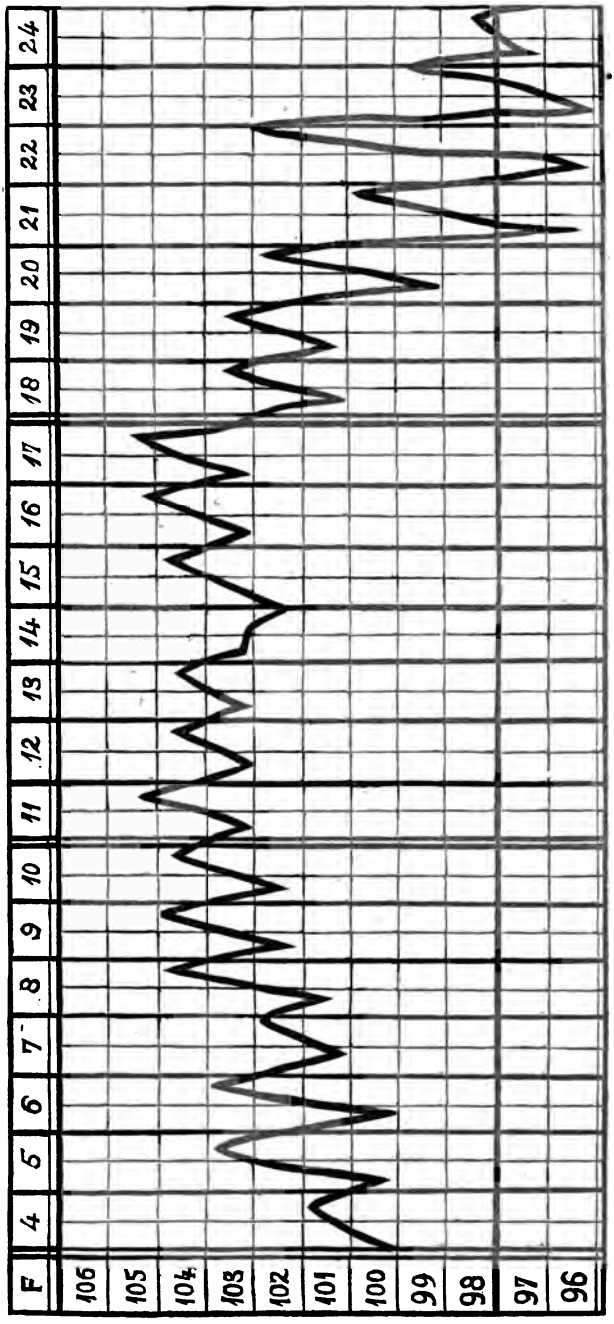
1. The thermometer points out a distinction between typhoid fever and some other diseases which often simulate it, viz. acute granular kidney, meningitis, peritonitis.

2. The thermograph of typhoid differs from that of other fevers, and especially in the mode of favourable termination.

3. An additional distinction between typhoid and typhus fevers is thus given.

4. It is possible by its use to appreciate intestinal lesions before they are recognised by the ordinary symptoms.

I have appended a table of observations in a case of typhoid fever which will give some idea of the thermograph of this disease:




REGINALD E. THOMPSON, M.D.

## VII. APHASIA AND AGRAPHIA.

THE *object of this paper.*—That the cerebral hemispheres are the organ of intelligence is universally admitted. But whether they are to be looked on as a single organ, one and indivisible, or rather as a congeries of distinct organs, in each one of which a distinct faculty of the mind is lodged, is a question which since the days of Gall has divided physiologists. The majority incline to the latter view—that of the localisation of mental faculties—in varying degrees. But it must be admitted, that though the arguments they adduce give great probability to their view, yet they are far from being actually conclusive.

It would clearly be a great step gained, could any one undoubted instance of cerebral localisation be made out; any one case in which a special mental faculty and a distinct portion of a hemisphere were so inseparably bound up together, that the integrity of the one absolutely implied the integrity of the other. An attempt has been made lately, chiefly by French physiologists, to establish such an instance. It is said that the faculty of articulate speech is inseparably connected with a certain limited portion of the left hemisphere, this portion being the posterior part of the inferior or third frontal convolution.

The chief object of this paper is to examine how far the pathological records of our hospitals harmonise with this doctrine. But at the same time I shall give a general sketch of the subject for the sake of those who have not yet turned their attention to the matter.

*History of the question.*—Gall, as is well known, located the faculty of language in that part of the anterior lobes which lies above the orbital plates, and professed to find in prominence of the eyeballs the external indication of a pre-eminence in this respect.

In 1825 M. Bouillaud published his *Traité de l'Encéphalite.* Like Gall, he located the faculty of speech in the anterior lobes, but did not, as Gall had done, fix on any limited portion of these lobes. "Tout ce que mes propres observations m'ont appris jusqu'ici relativement à la localisation des organes cerebraux intellectuels ou à la détermination du siége de ces organes, c'est que les lobules antérieures du cerveau sont les organes de la formation et de la mémoire des mots ou des principaux signes représentatifs de nos idées." And he asserts that "la perte de la parole et de la mémoire des mots est la conséquence inévitable d'une désorganisation de la partie antérieure du cerveau" (p. 285). The next step was made by M. Dax of Montpellier. In a paper read there in 1836,* M. Dax stated that it was the left hemisphere only that was concerned in speech; that the faculty which Gall and Bouillaud had lodged indifferently in either anterior lobe was in reality located only in the left one; and that consequently when loss of speech and paralysis were associated, the paralysis was invariably on the right side of the body. At a later period the son of this M. Dax not only repeated his father's statement, but with greater precision limited the seat of the faculty to that portion of the left hemisphere which borders on the fissure of Sylvius.

M. Dax's paper seems to have escaped the amount of attention which its importance deserved, and the whole question to have been left at rest for many years. It was not till 1861 that it again came to the surface.† In that year a most interesting discussion took place at the Anthropological Society of Paris on the whole subject of cerebral localisation; M. Gratiolet being the chief supporter of the "unity of the brain" theory, MM. Broca and Auburtin his chief opponents. In consequence of this discussion M. Broca was led to pay attention to sundry cases of loss of speech which from time to time presented themselves to him; and the result of his observations was to confirm the statements of MM. Dax as to the left anterior lobe,‡ and with greater precision than

* This paper is reprinted in the *Gazette Hebdom.* 1865.

† Cf. *Bull. de la Soc. d'Anthrop.* ii. 1861.

‡ M. Broca arrived at his conclusion and published it before the result which M. Dax (fils) had reached independently appeared in print. Cf. *Gaz. Hebdom.* April 21st, 1865.

either of these gentlemen had arrived at to locate the faculty of speech in the posterior third of the inferior frontal convolution.*

*Anatomy of the parts in question.*—If a fresh brain be stripped of its membranes, and laid on its side so as to display a lateral surface, a furrow will be seen running from above the fissure of Sylvius almost in a transverse direction, but also slightly backwards, till it joins the great longitudinal fissure above. This furrow corresponds very nearly with the line of suture between the frontal† and parietal bones, and is known as the furrow of Rolando. This furrow forms the posterior boundary of the anterior lobe. All that part of the brain which is in front of it, and at the same time above the Sylvian fissure—all that part, therefore, which is covered by the frontal bone—is included in the anterior lobe. Behind the furrow, and covered by the parietal bone, is the parietal lobe; and again behind this, and separated from it by a slight furrow which exactly corresponds in position to the lambdoid suture, is the occipital lobe. There remain yet two other lobes—the temporosphenoidal, which is separated from the anterior by the fissure of Sylvius; and the insula, which lies hidden in the fissure, and is only brought into view when the anterior and the temporosphenoidal lobes are drawn apart and the depths of the fissure exposed. Of these five lobes the only one of which it is necessary to give any further account is the anterior. The convolutions on the surface of this may be arranged in two subdivisions—namely, the orbital and the frontal. The orbital are those which lie on the upper surface of the orbital plates, and are therefore best seen when the brain is placed upside down. The frontal are those which are visible when the brain is viewed laterally. These frontal convolutions are four in number, and are known under different names. First there is the posterior or transverse frontal: this forms the anterior margin of the fissure of Rolando. The three other convolutions run in a longitudinal direction, so that they meet the transverse one at

* The first to call attention to the matter in this country was Dr. Jackson. Cf. *London Hospital Reports*, 1864.

† The furrow of Rolando is slightly posterior to the coronal suture. Cf. *Bull. de la Soc. Anatomique*, 2d series, vi. 340.

more or less of a right angle. They are known as the first, second, and third, or as the upper, middle, and inferior frontal convolutions. These fundamental convolutions, themselves invariable, are divided by numerous secondary furrows into smaller folds; and these secondary furrows vary considerably in their abundance and in their direction in different individuals, and even in the same individual, when the two hemispheres are compared together. There is only one of them that has any great constancy. This runs in a longitudinal direction, and separates the upper or first frontal convolution into two secondary ones; and this so completely, that some anatomists consider them to be fundamentally distinct, and would therefore make four instead of three longitudinal frontal convolutions.* But this furrow, though constant in normal men, is absent in some idiots and in all inferior animals. It must therefore be considered a secondary and not a fundamental division. Of the second or middle frontal convolution there is nothing special to be said; and this brings us to the third or inferior one. This forms the upper boundary of the fissure of Sylvius, and is therefore sometimes spoken of as the "superior marginal" convolution. It is in this convolution and in its posterior third that Broca localises the faculty of articulate language. It will at once be seen that this statement, though more precise, does not differ much from that of M. Dax (fils), who places the faculty in the convolutions about the junction of the anterior and middle lobes. Both Dax and Broca, moreover, add the further limitation, that the seat of the faculty is on the left side only.

*Means of investigation.*—There are usually three ways of investigating such a question as this: direct experiment, anatomical research, pathological observation.

*Direct experiment.*—Of these, the first is clearly inapplicable in the present case. For man is the only animal that speaks, and on him we cannot experiment. Some, however, may think that the sounds made by animals bear a certain analogy to articulate speech, and may possibly be imperfect symbols by which animals communicate in some degree with each other. To such it may be interesting to know what is the result of injuring in animals the hinder portion of the

* Cf. Auburtin, *Soc. Anthrop.* 1861, p. 212.

anterior lobes. M. Bouillaud pierced with a gimlet the head of a living dog from side to side. The instrument passed through the brain at the junction of the anterior and middle lobes—that is, about the part which corresponds to Broca's region. After death it was found that there was a canal as big as one's finger in this part, and that all the rest of the brain was perfectly healthy. The dog recovered completely from this fearful operation, though with the loss of much of its former intelligence. The point, however, of chief interest is this: the dog entirely lost its power of barking. It could still make sounds, uttering sharp cries when in pain. But during the two months that it lived in perfect health after the operation it was never heard to bark, as it had been used to do, so as to express its emotions.* "Il n'aboyait point, soit pour témoigner son affection, soit pour éloigner les étrangers qui venaient à la maison." To this experiment I do not, however, myself attach much importance, because of the absence of any certain analogy between the bark of a dog and the articulate speech of man. There is then little help to be got from experiment; and I pass on to the arguments from anatomy.

*Anatomical arguments.*—So little is really known of the minute structure of the cerebral hemispheres, that even here we get little assistance. Still two different arguments have been derived from anatomy, both unfavourable to Broca's opinion. One of these is directed against the unilateral localisation of the faculty, the other against localisation altogether.

*The first.* It is said that in an organ so symmetrical as the brain it is impossible to admit a difference of function between the two sides. One hemisphere exactly resembles the other in form, and must therefore as exactly resemble it in its office. This is the argument on which M. Trousseau relies, and it has been advanced also, among others, by Vulpian. "Il paraît absolument certain que les deux hémisphères cérébraux doivent avoir les mêmes fonctions, et que si les facultés sont localisées dans telles ou telles lésions, ils ne sont pas les unes dans le côté droit du cerveau, les autres dans le côté gauche; mais qu'elles doivent se trouver toutes

* Magendie's *Journ. de Physiol.* x. 89.

dans chacun des deux hémisphères et distribuées d'une façon symmétrique."* But is there really such an absolute symmetry between the two sides of the brain as to justify this summary conclusion? Most certainly there is not. The secondary convolutions are never arranged in the same way in the two hemispheres. And it is a notable fact, that this want of symmetry is peculiar to man, or at any rate much more strongly marked in man than in any other animal. "In comparing," says Todd, "the human brain with that of the inferior animals, we notice great† exactness of symmetry between the convolutions of opposite hemispheres in the latter, and the want of it in the former. It cannot, however, be said that the convolutions of opposite hemispheres in the human brain are absolutely unsymmetrical. A careful examination will show that the same convolutions exist on each side, but apparently of different sizes, and not closely corresponding as regards situation."‡ It would thus appear that man, distinguished from other animals by his faculty of speech and by his higher intellectual capacity, is also distinguished from them by the want of symmetry in his two hemispheres. We may go even further than this. At that period of life when the intelligence is undeveloped, and the faculty of speech not yet acquired, the brain even in man presents perfect symmetry on its two sides. "In the imperfectly developed brains of the infant or young child" (I again quote from Todd) "the convolutions are quite symmetrical." Thus the development of the intelligence and the addition of speech is accompanied by a loss of symmetry in the hemispheres; and clearly if any conclusion at all is to be drawn from this, it must be in favour of, and not adverse to, the theory of unilateral localisation.

It may indeed be that originally the two sides are perfectly symmetrical, and that there is at that period a strict

* Vulpian, *Phys. du Syst. Nerv.* p. 717. So also Bouillaud, *Tr. de l'Encéphal.* p. 263.

† It is too strong a statement to say that there is a perfect symmetry in the brains of all other animals than man. This is true of most, but not of all inferior mammalia. The seal, for instance, has unsymmetrical hemispheres (see *Leuret et Gratiolet*, pl. xi.); and so have the higher apes, but in a less degree than man.

‡ Cf. *Cyclop. of Anat. and Physiol.* iii. 697.

similarity in form and properties between any two corresponding parts. In this case we may suppose with Dr. Moxon the difference between the two sides to arise in the course of education. The education of an organ is a laborious task, and not the easiest is that of the organ of language. In order to spare ourselves trouble, it may be that we limit our task to the instruction of one organ, instead of two; the necessary duty being as well performed by one side as by both, so long as the brain is healthy. And this view would explain several difficulties. It would, for instance, explain the few exceptional cases to which I shall have to recur later, in which loss of speech has depended upon disease of the right side of the brain, not of the left. We may suppose that in such cases, from some unknown cause or other, the educational development has selected the right side instead of the corresponding part on the left, just as in some more frequent cases we see the left hand educated to perform duties which in the vast majority of men are only performed by the right. It would explain, moreover, the fact that the faculty of speech is seldom entirely lost. Almost invariably, even in the most striking cases, there remains the power of giving utterance to some few words. This residue of power may be due to some feeble degree of education shared in by the right side of the brain. Again, this view would explain the gradual improvement of speech which occurs in some patients after they have been long almost entirely unable to articulate. In such cases it is of course possible that the lesion on the left side has been repaired; but it is also possible that the improvement may be due to a gradual education of the corresponding organ on the right side.*

*The second.* A second argument has been derived from anatomy, not against unilateral localisation, but against localisation altogether. It is urged that the minute structure of the several convolutions is identically the same; that there is no difference to be detected in the elements of which they are composed, nor in the way in which these elements are combined. Such perfect identity of structure, it is said, involves identity of function. Now, in answer to this, it might

* See additional note on this point, at the end of the paper.

be replied that our knowledge of the minute structure of these parts is so imperfect as to render such an argument really worthless. Secondly, it might be said that very great differences in function are perfectly consistent with apparent similarity of structure. What microscopist can distinguish a secreting cell taken from a lacrymal gland from one derived from the pancreas? Yet under this apparent similarity lies hid some unknown difference which causes them to act in entirely different ways. Such a difference, for all we know, may exist between the nerve-cells of separate portions of the hemispheres. But, lastly, there is a still more satisfactory reply. The supposed uniformity of structure does not exist. This has been clearly established* by Broca in the case of some convolutions, and he thinks he has discovered it in the case of others. He believes, in fact, that each principal group of convolutions presents certain distinguishing characteristics in the arrangement of its gray matter. Thus the cortical layer is much thinner in the lobe of the insula than it is either in the frontal or in the occipital region; and a still more curious distinction exists between the convolutions of the two latter.

If a thin slice be cut, at right angles to the surface, from one of the frontal convolutions, or in fact from any excepting the inferior occipital convolutions, and then gently pressed between two pieces of glass so as to spread it out without actually crushing it—if such a section, I say, be made and held up against the light, the following appearance will be recognised. It will be seen, as Baillanger first pointed out, that the so-called gray layer is formed of six distinct laminæ, which are alternately opaque and semi-transparent, the opaque laminæ consisting of white matter, the transparent ones of gray. The most superficial of the six is opaque (*Bull. de la Société Anat.* xiii. 302), then comes a gray layer, and so on alternately to the sixth, which is gray and continuous with the medullary substance of the convolution.

But if a similar slice be taken from one of the inferior occipital convolutions and examined in the same way, instead of six layers only five will be found. It would seem that this is due to the absence of the second layer of gray matter; for

* *Bulletins de la Soc. Anat.* 1861, p. 818.

the second opaque lamina is much thicker than the rest, as though it had become confounded with the third by the absence of the intervening transparent portion.

What the import of this special arrangement may be is quite unknown. Some doubtless it has, for the arrangement is constant. For the present purpose it is sufficient to point out that the structure of different convolutions is different, and that difference in structure naturally suggests difference of function.

*The argument from pathology.*—From what has preceded it is, I think, plain that neither experiment nor anatomy furnish grounds for rejecting at once the view upheld by Dax and Broca. I pass on to the evidence furnished by pathology. This is of all the most important. For it was from pathological observations that the theory was first derived, and it is by this that a certain solution of the question will doubtless in time be furnished. It is stated by Broca, or those who agree with him, that the portion of the brain in question has never yet been found in a state of disease without impairment of the faculty of articulate speech, or, as it is now termed, without "aphasia;" and that a like statement cannot be made of any other portion of the convolutions. Secondly, it is also stated that true aphasia never occurs unless either this part be itself diseased or those portions of white matter by which it is connected with the parts below. The former of these two propositions is, I believe, uncontradicted. There is no case, to the best of my knowledge, on record in which disease of the posterior part of the third frontal convolution on the left side has co-existed with integrity of speech. Still it is not impossible that such a case should arise. Such an exception would be no sufficient refutation of the theory. For, as I have already noticed, there is good reason to believe that in some few individuals it is on the right and not on the left side of the brain that the central organ of speech is situated. No single case, therefore, would be a perfect refutation of this first proposition, excepting one in which there was a lesion both on the right and the left side.

The second proposition is more open to question, and less easy to deal with, for this reason. We do not know with precision how the fibres run which connect any given portion of

the convolutions with the organs below. We cannot, therefore, say with certainty what lesion of the white matter would isolate such a portion, cutting off its communications downwards. Still, when we see cases of aphasia in which the convolutions are sound, but there is a larger destruction of the white substance in the left hemisphere, or even a more limited one in the near neighbourhood of the supposed organ of speech, then, if the first proposition be admitted, it is a fair interpretation to say that the aphasia is produced by the isolation of that organ; such isolation being, of course, practically equivalent to destruction.

It must, however, be admitted that there are on record a certain number of cases—not very numerous—in which speech was notably impaired, and yet after death no lesion was found either in the third frontal convolution or in the white matter near it, but some damage or other in distant portions of the brain. These cases, of course, present a difficulty; but there are some considerations which tend, I think, very much to lessen it. In the first place, these cases are almost all recorded by persons who were in ignorance of the theory we are discussing, and who therefore had not their attention specially called to the condition of this portion of the hemisphere. Now there is nothing so easy as to pass unnoticed a limited lesion of the gray matter of the convolutions. In the most typical case of aphasia (case v.) I have seen, there was a lesion very limited in extent, though very thorough in degree, in the exact spot fixed on by Broca. This lesion would certainly have escaped notice, had it not been specially looked for. The brain when removed from the skull looked healthy on its surface. It was only on removing the pia mater that the almost diffluent condition of the limited spot was discovered. It is not the rule in post-mortem examinations to remove the pia mater. Such a lesion, then, would only be discovered by accident in an ordinary examination; and the chances of hitting on it would be still less if the attention was directed to some more manifest injury existing in some other portion of the brain, such lesion being supposed sufficient to account for the symptoms observed in life. That such is the explanation of many, at any rate, of these apparent exceptions can, I think, scarcely be doubted,

when we consider that almost all occurred before attention was specially directed to the matter. Another consideration which may explain some of their apparent exceptions is this: not every impairment of articulation is aphasia. What true aphasia is I shall have soon to consider. At present it is enough to say that it is limited to loss of speech from certain mental impediments, and does not include the speechlessness which is produced by paralysis of muscles or disarrangement of the external organs of articulation. Now it is very possible that in some of the apparent exceptions the difficulty of utterance depended on these latter conditions, not on the former. Again, in some of the cases supposed to contradict Broca's theory, not only has the third frontal convolution been apparently free from disease, but no lesion has been found in any part of the brain whatever. The whole organ has seemed healthy. If these cases are admitted as evidence against Broca's doctrine, they must equally be admitted as evidence against the doctrine that the brain as a whole is the organ of intelligence. This no one will admit. What they really prove is, that there are lesions of the brain which escape our present accuracy of research; minute yet all-important alterations in the structure of nervous centres which we are as yet perfectly unable to detect. We must clearly first find out what these alterations are before we can say that they did not exist in any given case in the third frontal convolution.

*Aphasia.*—I said just now that every impairment of articulation does not constitute true aphasia. It is necessary, therefore, to consider to what condition of speech this term is applied.

Man communicates with his fellows by means of certain conventional symbols of various kinds, and addressed to various senses. Of these symbols the two of greatest importance, and the only ones which concern us now, are those used in speaking and in writing. And first of speech.

What is necessary in order that a man shall understand the spoken symbols of another? First, he must have a certain external organ, the ear, to receive the impressions of sound. This ear, again, must be connected by a nerve with a certain

central organ or ganglion, to which the impressions may be conducted, and in which they may be converted into sensations. Thirdly, this central organ must be connected with the cerebral hemispheres, and the connecting links must have been so modified by habit that each distinct sensation in the ganglion shall call up in the hemispheres a distinct idea. Now in aphasia all these processes remain without injury. The patient hears and understands all that is said to him as well as if in perfect health. There is no diminution in his power of interpreting symbols, of converting them into ideas.

What is necessary in order that a man shall communicate his ideas to another by speech? In the first place his ideas must evoke at once their appropriate symbols in his mind, each idea mentally clothing itself in the word or words which conventionally stand for it. This faculty of converting ideas into symbols is quite distinct from that of converting symbols into ideas. The one may be acquired or lost independently of the other. Thus, a child learns to interpret the language of others before it can itself speak. Adults as a rule follow the same order in learning a foreign language. Most of us moreover know what it is to have the pictorial image of some familiar object in our mind, and yet to be perfectly unable to call up its name. The idea is there, but the idea does not suggest the proper symbol. The moment, however, some other person uses the word in our presence it is at once perfectly recognised. Now a similar forgetfulness of words, but more extensive—a similar inability, that is, to translate ideas into symbols—constitutes one form of aphasia; a form which I will call *Amnemonic Aphasia*, to distinguish it from another variety to be mentioned presently. The patient in such a case suddenly in speaking stops short, unable to recall the word he requires. The moment, however, that he is prompted he is able to go on. If the faculty is much impaired, and the stoppages consequently very frequent, the patient becomes more and more taciturn, yielding in despair to the increasing difficulty. Sometimes, instead of actually stopping in his speech, he avoids the difficulty by some periphrasis, or frequently substitutes for the forgotten symbol some perfectly different one, with a perfectly different meaning. He will say, for instance, "two-shilling piece" when he means to say

ἀμνημων - forgetful.

"spectacles" (cf. case iii. p. 104); and it is noticeable that often though the two words, that used and that meant, are utterly unalike, yet that there is a certain degree of similarity in the pictorial images of the objects for which they stand. Thus a patient may say "boat" when he wishes to say "tub;" and perhaps the substitution was of the same kind in the instance I just gave. When the man said "two-shilling piece" instead of "spectacles," there was probably some confused notion of duality and circular shape which led to the exchange. More frequently, however, the resemblance is one of sound, not of image. The defect here is a slighter one. The symbol is only half forgotten, not entirely. Thus "purging" will take the place* of "perjury," "pamphlet" of "camphor," "dispersion" of "dispensary," and so on. But in many cases no connecting link either of image or of sound can be detected. Thus "wagons" replaced "dresses," "winkles" replaced "watercresses" in case iii. In all cases, however, it appears to be a constant fact that grammatical form is observed; only substantives are substituted for substantives, verbs for verbs, numerals for numerals, proper names for proper names. I have neither seen nor read any case in which there was an exception to this rule.

The first requisite, then, for the expression of ideas in speech is the memory of words; and the loss or impairment of this faculty constitutes amnemonic aphasia. But besides this a second act of memory is required, closely connected with the former, yet distinct from it. Not only must we remember words, but we must also remember *how to say them.* The utterance of each word is a complex action, requiring the coördinate uses of many muscles. The power of performing it we acquire gradually by conscious effort; and though when once acquired it becomes so easy as to seem to be quite independent of mental aid, yet in reality it is not absolutely automatic. It still demands a certain amount of attention for its due performance; and if this attention is withheld, our utterance becomes slovenly and indistinct.

Now the mere memory of words by itself may produce an inward repetition or mental rehearsal of a phrase, but it can do no more. For the utterance of the phrase in articulate

* Watson, i. 529.

sound, this second memory is absolutely requisite. Should it fail, we have a second form of aphasia, which for distinction we may call *Atactic Aphasia*, the loss of speech being due to the want of coördinating power over the muscles of articulation.

This second form of aphasia is distinguished from the former or amnemonic variety by this characteristic symptom. Prompting is no longer of the slightest help to the patient. You may repeat the word or phrase which he requires as often as you please before him, and he will remain as silent as before. For what he wants is not the word, but the recollection of the process by which to give it utterance.

Patients who suffer from this affection sometimes are entirely without speech. More frequently, however, they retain the power of saying some few words, and these generally are words of familiar use. Thus in case i. the patient could say "no;" this was his whole vocabulary. In case viii. the patient could only say "yes." In case xx. the vocabulary consisted of the two words "our father." In case ix. of the words "no," "yes," "bible." Sometimes the patient uses his limited supply of words correctly, and when the answer to a question requires other words, of which he is not master, remains silent or tries to supply the defect by pantomimic signs. In other cases he answers all questions alike with the same word or phrase, as though he were a parrot that had only learnt one expression. Thus the woman in case xxii. invariably said "yes" to all questions, whether a negative or affirmative was required. In some of these cases the patient seems unconscious of or indifferent to the impropriety of the answer; but in others he is clearly perfectly aware of it, and shows by his impatient gestures his distress when he has answered incorrectly.

In these cases of atactic aphasia it is of course impossible to say whether there is or is not amnemonic aphasia as well; whether or not there is, in addition to the inability to articulate, also forgetfulness of words. That the two forms do sometimes coexist is, however, plain from cases ii. and iii. Both these men were at first clearly affected with atactic aphasia. They were unable to speak even when prompted. But after a time the ataxia disappeared, and as they recovered their

ἀτάκτως - in a disorderly manner.

power of utterance, it was found that they suffered from a considerable forgetfulness of words. It can hardly be doubted that this had existed previously in the earlier stages of the attack. In these men, then, there was not only deficiency of utterance, but also imperfect mental rehearsal of phrases.

On the other hand, it seems equally plain that atactic aphasia is not always accompanied by amnemonia, or, at any rate, that sometimes if this latter defect be present at all, it is so in a far less degree than the ataxia. Otherwise patients who are utterly unable to articulate would be also utterly incapable of thinking. For thought without the mental rehearsal of words is impossible. But no one who has watched such a man as the patient in case v. would admit that all thought was suspended in his brain, or in a degree corresponding to his want of utterance. The expression of his face was lively and intelligent: he took a manifest interest in all that was going on about him, smiling when anything was said or done that tickled his fancy, and expressing himself by means of suitable pantomime. There is also on record a striking case in which a medical and scientific man, a well-known French professor, lost for a time all power of utterance, but afterwards recovered. He described how during his attack of aphasia he was able to arrange his lectures in his mind, and to marshal his facts and sentences in due order. It is impossible that he could have done this without the memory of words, yet his deficiency of utterance was complete. His malady, then, was purely atactic, with little or no mixture of amnemonia.

The aphasia of Broca, as his cases show, is the atactic variety. The mental faculty, then, which he locates in the third frontal convolution, must be that which is required in the process of coördination. As the memory of words may remain when this faculty is gone, we are led to suppose that it must have a separate cerebral centre; but, at the same time, as the two faculties are so often coincidently impaired, we may infer that the two centres are closely contiguous, so as to be easily involved in the same lesion. At present there are no precise observations as to the limits and relative positions of these centres. It is necessary, therefore, to deal with them as though they were one, and to give to this compound centre

some name which will serve to include both faculties. Such a name is "the central organ of articulate speech." Even this name, however, is not sufficiently wide. For, as will be presently seen, in this same region, and as yet without known lines of demarcation, are lodged other mental faculties, those, namely, concerned in the expression of ideas by written symbols. There are, moreover, on record a few cases, though I have never myself seen one, which countenance the notion that here too are portions of gray matter, the integrity of which is necessary for pantomimic expression. So that this portion of the brain would be the "central organ of language," meaning by language the expression of ideas in symbols of any kind, audible or visible.

The view, then, according to this, which would be most consistent with pathological observation is the following: that in this region of the brain are lodged the various mental faculties concerned in the expression of ideas by symbols; that each of these faculties has its separate centre, capable of separate lesion; but that the centres lie in such close juxtaposition that a single lesion is likely to injure several or all of them, in varying degrees.

There remains a third requisite condition for the expression of ideas in articulate speech. Not only must we remember words and how to utter them, but the external organs of voice and articulation, with their various muscles and nerves, must be in an adequate condition of health. Were these entirely paralysed, for instance, there could be no speech; but such a case would not be one of aphasia. For this term is, as I said before, limited to loss of speech from mental causes. It must, however, be remarked that in most, though not all, cases of true aphasia there is hemiplegia, and in this paralysis one side of the mouth and tongue are frequently involved in a slight degree. It might therefore be thought that the loss or impairment of speech was due merely to this partial paralysis, and had nothing to do with loss of memory or other mental defect. Such an explanation is, however, quite inadmissible. Paralysis of one side of the tongue and mouth interferes very little with articulation.* The most that it can do is to render

* It must, however, be admitted that in aphasia the tongue is often more affected than in simple hemiplegia. There is an inability to protrude

the speech somewhat indistinct and thick, but never to such a degree as to make it unintelligble. This 'thickness' of speech is quite distinct from and cannot be confounded with the total inability to pronounce words which characterises atactic aphasia, and still less with the tendency to substitute one word for another and the forgetfulness of terms which marks amnemonia. No amount of paralysis, of course, can account for a man saying "two-shilling piece" when he means "spectacles," nor can it really account any more for a patient being unable to say any other words than "bible," "our father," "yes," "no," while he is able to utter these distinctly. It is just possible, indeed, as Dr. Jackson* has remarked, that a mistake might be made, when the tongue was paralysed totally on both sides, and the inability to speak consequent on this paralysis be erroneously called aphasia; but such complete lingual paralysis on both sides is excessively rare, and in the cases given in this paper does not occur.

*Agraphia.*—All that has been now said of speech may be said equally well of the expression of ideas in written symbols or writing, with, of course, the necessary substitution of 'eye' for 'ear,' 'hand' for 'mouth' and 'tongue,' and so on. Here too we meet in practice with cases in which the mental faculties concerned are impaired or lost. Of this defect, for which, for convenience, I would coin the name *agraphia*, there are moreover, as of aphasia, two forms—an amnemonic and an atactic.

In amnemonic agraphia the patient can form letters and words with sufficient distinctness, but he either substitutes one word for another, or, as in case ii., writes a confused series of letters which have apparently no connection with the words intended.

In atactic agraphia the power of writing even separate letters is lost, sometimes entirely, as in case iii. Here all attempts to write resulted in a mere succession of up and down strokes, bearing no kind of resemblance to letters. Sometimes, however, if the patient's hand be carefully watched while writing a given word, it will seem that there is a certain

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it; whereas in simple hemiplegia the tongue can be protruded, though not in a straight line. So that it would seem that the loss of control over the movements of the tongue in atactic aphasia frequently includes other movements than those required in speech.

* Cf. *Lond. Hosp. Rep.* i. 398.

indistinct resemblance in the scrawls produced to the letters required; so indistinct and distant, however, as to render the whole illegible. I do not know whether the power of reproducing some one or two isolated words is ever retained, as is the case in atactic aphasia; but case i. would seem to imply that such may sometimes happen. The man in that instance was perfectly able to read written sentences, but he could not be got to write a single word or letter. He contrived, however, to write down the number of his regiment with sufficient distinctness for me to decipher it.

In the very few cases of atactic agraphia which I have myself examined with care, I have always found that besides the ataxia there was also amnemonia. This I determined by the following method. I gave the patient a set of letters printed in large type, on separate pieces of card—such letters, in fact, as children use for playthings—and asked him to pick out and arrange the letters of his name. Had there been simple ataxia with unimpaired memory of symbols, he would have been able to manage this. But in no case have I found the patient able to do it; though he at once succeeded when his name was distinctly written down and set before him as a copy.

Aphasia and agraphia are usually combined together. As a rule, when a patient loses the faculty of speech, he at the same time loses that of writing. But this is not always the case. The man in case v. retained the power of writing, while his speech was limited to a few monosyllables. So in case iii. the man suffered both from aphasia and agraphia, but in very different degrees. The aphasia was slight and of the amnemonic form; the agraphia was complete, and atactic as well as amnemonic.

The occasional separation of agraphia and aphasia points, as I have already remarked, to the existence of distinct cerebral centres for the faculties concerned in speaking and in writing; while the more frequent coincidence of the two affections leads us to infer that these distinct centres must be closely contiguous.

## CASES.

Of the following cases only the first five are from my own observation and notes. The rest I have collected from

our hospital registers. I have made no selection, but have given all cases I could find in our records,* in which loss or great impairment of speech formed a notable symptom. Many of these cases, it should be stated, have already been published. One (case v.) was brought by myself before the Pathological Society. Others have been published in various places by Dr. B. Jones, Dr. John Ogle, and Dr. Dickinson, not as illustrating aphasia, but as instances of various pathological alterations of the brain.

CASE I.—David P., a Chelsea pensioner; admitted Feb. 1867. Right hemiplegia and total loss of speech. Quite unable to give any account of himself. I learnt afterwards that he had been in this state since the preceding summer.

He could walk about, the leg being only slightly affected, and its sensibility good. The right arm was flexed and rigid, and the hand stiffly clenched. The sensibility in this limb was greatly impaired; at first I thought he could not feel at all, but I afterwards found that when his arm was pinched sharply and continuously, after a time he began to feel it. There was, however, no less an interval than thirty-five seconds between the moment when he was pinched and the moment when he showed signs of feeling. I tried this experiment many times, and always with the same result; the exact number of seconds, however, somewhat varying. When sensation was excited he recognised the exact spot pinched.

He could not protrude his tongue, though he could move it freely inside his mouth, and swallowed without difficulty. The right facial muscles were slightly paralysed; the pupils and eyes unaffected.

The only word he could say was "no." This word he used correctly, and when an affirmative answer was required nodded. He clearly understood what was said to him, and made useless efforts to

* This statement is no longer quite true. Since writing it I have changed my plan, and cut out those cases in which the loss of speech depended on disease of the pons Varolii. My reasons were, first, that I wished to shorten my paper; and secondly, that I had not sufficient cases to be of much service. The cases, moreover, would have given a wrong impression. They were all cases of disease of the left half of the pons with paralysis of the right limbs. This would have appeared very consistent with the other cases. But on examining a large number of recorded cases of diseased pons, I find that, though loss of speech goes more frequently with disease of the left half than with disease of the right, yet that this latter association is by no means uncommon. This would at first seem inconsistent with Dax's views; but I believe the explanation will be found to be this: that the nerve-fibres which pass down from Broca's region cross over to the opposite side during their passage through the pons; so that they may be equally injured by a lesion on the left in the anterior portion, or by a lesion on the right in the posterior part of the pons.

reply. He could read; for when a written sentence was placed before him, and he was asked to pick out any word in it, he always did so with perfect readiness.

He could write, as I learned from his sergeant, before his illness, but now could not form a single letter even when a copy was set before him. The only intelligible writing he could produce was the number of his regiment, 74. This he wrote so that I could read it, and I found afterwards that it was correct.

I gave him a set of largely-printed letters, and asked him to pick out his name. He managed after a long time to pick out the first two letters, but could get no farther. He then went to his bed, took down his card on which was his name, set it in front of him, and with this to help him picked out the rest.

There was no heart-disease. He remained in hospital without change for two months.

In this, as in most, though not all, cases of aphasia the patient could not protrude his tongue. Whereas, however, this symptom usually passes off in a short time, here it remained permanently. The speechlessness, however, cannot be attributed to this. For the tongue could be moved about freely in the mouth, and the loss of speech was much more complete than could be accounted for by any partial paralysis of that organ. Moreover, the man could utter distinctly the word "no," which requires the help of the tongue as much or more than the word "yes," which he was totally unable to pronounce. Lastly, the coincidence of agraphia shows this to have been a real case of aphasia. The peculiarity in the sensibility of the arm is worth noticing. Cases in which even a longer interval was required for the conduction of impressions to the sensorium are recorded by Lockhart Clarke in the last volume of these Reports, p. 77; and another, by M. Potain: cf. *Bull. de la Soc. Anatom.* 1861, p. 565.

Case II.—Edward Thomas Dodswell, aged 34, on Dec. 3, 1866, after a drinking-bout, had several fits, and was found by his wife speechless. The next day another fit, which left him hemiplegic on the right side, and he was brought into hospital.

*Dec.* 7. Complete lax palsy of right arm and leg; incomplete paralysis of right side of face. Sensibility unaffected. Cannot protrude his tongue, though he moves it freely about inside his mouth. Deglutition unaffected. No heart-disease.

He can say a few words. Answers with "yes" and "no" correctly. I asked him his name. He made an inarticulate noise. Is it John? No.—Is it William? No.—Is it Edward? Yes.—Is it Thomas? Yes.—

How old are you? Twenty-four.—Twenty-four? No.—Thirty-four? Yes.—Say thirty-four. Twenty-four.—Can you tell the time? (showing him a watch) Yes.—What is it? Three (it was really two). No, it is two. Three, after a struggle.—Can you write? Yes.—Write your name. With his left hand he wrote distinctly "Hensislerges," which had not the slightest resemblance in sound or look to his real name.—Is that your name? (after looking at it with a look of perplexity) No.—Is this your name? (writing it for him.) Yes.—I could not induce him to try and write from a copy.

*Jan.* 18, 1867. Has so far recovered from his paralysis as to walk about the ward, and can now protrude his tongue. His speech is very little better, nor does prompting help him. He can say his name sometimes, but not always, and can count up to twenty, missing out, however, here and there a numeral. His writing is much as before: he can form the letters perfectly, but writes a mere unmeaning succession of them. A set of letters was given him, but he could only pick out the letters of his name when a copy was set before him. His sense of smell is very much diminished. When a strong-smelling drug is placed under his nose, and he is asked if he can smell it, he says "no." He can, however, perceive the tickling sensation of ammonia. He left the hospital without further change. Some months later I saw him again. He was much improved. He could now at once pronounce any word which he heard uttered; but he frequently misused words, calling things by the wrong name and even miscalling his children. He had recovered the power of writing, using his left hand.

The aphasia was here at first atactic. The man could not pronounce certain words even when he was prompted. But at a later period the ataxia disappeared, and the case became one of simple amnemonic aphasia. There can, I think, be little doubt that the amnemonia existed at the earlier stage, co-existing with the ataxia, but masked by it. The agraphia was purely amnemonic. He had not forgotten *how* to write, but *what* to write.

CASE III.*—James Simmonds, æt. 54; Feb. 1867. This man had a heavy blow on the left side of the head seven years ago, and never was the same man as before. He was, in fact, obliged to give up his work from that time. Some years back his wife noticed that there was something strange in his speech. He spoke without difficulty or hesitation, but miscalled things strangely. He remained, however, in his usual state of health for several months, when he had a fit one morning while dressing. This left him speechless and hemiplegic on the right side. For a fortnight he could not speak at all, though quite sensible. He could not say so much as "yes" and "no." From this he gradually recovered, but always as before miscalled things. He frequently called his children by the wrong name; would say "Peter"

* This case is the only one which was not in the hospital. The man is a patient of mine at the St. George's Dispensary.

for "James," for instance. A month ago he had a second fit, which left him with less power than before in his right side, but made little or no change in his speech. When this second fit occurred he was suffering, as he had often done, from a slight attack of gout in the hand.

There is now partial paralysis of the right side, which does not prevent him from walking. The facial muscles on that side are slightly affected as well as the limbs. His speech is very hesitating and imperfect. He often stops suddenly at a loss for a word; then frequently uses a wrong one. As examples, he substituted "barber" for "doctor," "two-shilling piece" for "spectacles," "winkles" for "watercresses," &c. He can, however, pronounce perfectly any word when he is prompted. He says that he generally knows when he has used a wrong word, but not always.

Before his illness he wrote a good hand (I saw specimens of it), and was above his lot in education. Now he cannot form a single letter. Even with a copy before him he makes only uncertain up and down strokes. I gave him some printed letters, and asked him to pick out his name. After a long time he arranged JICMNOS. Clearly he had some slight notion of the letters which composed his name. According to his wife, before his illness, he spelt well, and was very particular about the spelling of his own name, which is one admitting of many variations. When a copy was before him he quickly picked out and arranged the name correctly. He can read; but he says that reading makes him very giddy, and causes great pain in the head. His general understanding seems good, and up to the average of men in his class. The tongue protruded without difficulty. Deglutition perfect. Senses of sight, smell, hearing good. The urine very albuminous. No heart-disease. Still under observation.

Here, as in the last case, the aphasia is at first both atactic and amnemonic, but after a time the ataxia gives way, and there remains simple amnemonia. The agraphia is atactic, for he cannot form a single letter even with a copy: it is also amnemonic, or he would be able to pick out the letters which form his name. There is, however, some feeble recollection of the symbol. It is remarkable that in this man the agraphia is more complete and more enduring than the aphasia, whereas the contrary is usually the case.

CASE IV.—James Pascoe, æt. 26. Had several fits three years ago. For two years after them was utterly unable to speak, and was paralysed on the right side. As well as can be gathered from him, there was also at first some affection of the left arm. There is now palsy of right arm and leg, with great rigidity of the arm, which is flexed. Hyperæsthesia of all the right side, face included. He cannot bear to have it touched. Tongue freely protruded, and moved with per-

fect ease in all directions. Deglutition perfect. He can say a few words distinctly, but mostly talks in an unintelligible gabble, in which here and there a word can be made out. He also hesitates very much, as though he was trying to recall words to his memory. He clearly understands all that is said to him, and seems cheerful and intelligent. He states that he could write well before his fits. I cannot persuade him to make an attempt to write with his left hand. From a set of letters he cannot pick out his name. After a long time he arranged JASPENOS, in which there is plainly some feeble notion of his name. Directly I wrote his name and placed it before him, he picked the right letters out, and arranged them duly.

He can read. Heart sounds distant: no murmur. Still under observation.

This case is valuable, as affording evidence that the inability to speak in atactic aphasia is not due to paralysis of the tongue. This man could move his tongue with perfect freedom in all directions.

Case V.—Joel B. Oct. 18, 1866. Had rheumatic fever and endocarditis twenty-five years ago, but since that has had good health. While at work on Oct. 15 fell down suddenly without losing consciousness, and found that he was speechless, and hemiplegic on the right side.

On admission he was found to have extensive heart-disease, with the pulse characteristic of aortic regurgitation. There was complete lax palsy of the right arm and leg, with unimpaired sensibility. There was at first some difficulty in deglutition, and in protruding the tongue; but this latter symptom passed away in a few days. There was slight pain in the left side of the head.

His speech was limited to the two words "yes" and "no." These he used correctly. After he had been in the hospital some time, he recovered the power of saying some few words, chiefly monosyllables.

He could write with his left hand with sufficient distinctness words which he could not pronounce, when asked to do so. In his writing there was often a tendency to reduplication of letters. For instance, he wrote 'Testatament' for 'Testament.' But I cannot say whether this was more than the result of deficient education.

His mind seemed quite clear. He understood all that was said to him; took interest in all that was going on about him; listened to conversation with an animated lively look, laughing at any little joke, and expressing himself frequently by suitable pantomime. In December he was attacked by œdema of the lungs, and died on the 20th.

*Post-mortem.*—Œdematous lungs: extensive aortic and mitral disease.

Much semigelatinous fluid in subarachnoid space. Surface of brain healthy, excepting at one limited spot. This was the posterior part of the third frontal convolution on the left side. Here was a softened, almost diffluent, patch, about three-quarters of an inch in breadth,

reaching from the highest point of the third convolution backwards and downwards to the fissure of Sylvius. The softened patch was not actually the most posterior part of the convolution, for there was a narrow unsoftened strip between it and the transverse frontal convolution. On cutting into the brain a second small patch of softening was seen in the centre of the left hemisphere external to and rather above the corpus striatum, and extending towards the posterior termination of the fissure of Sylvius. All the rest of the brain was apparently healthy.

The left middle cerebral artery was free in its main trunk; but in one of its secondary branches at a bifurcation was a hard shotty bit of fibrine, completely obstructing the passage, so that when water was injected into the vessel it could not pass, though considerable force was used. There were also fibrinous blocks in the spleen.

This is the only case of aphasia in which I have had the good fortune myself to examine the brain, and it is a case strongly corroborative of Broca's view. The sequence of phænomena is evident. First, rheumatic fever, and disease of the valves of the heart; later on, formation of fibrinous clots on these, and consequent embolism of the splenic artery, and of a branch or branches of the left middle cerebral; lastly, softening of the parts of the brain dependent upon them for their nutriment, and notably of the third frontal convolution in its posterior part.

The evident intelligence of this man forbids us from supposing that there was any great forgetfulness of words. The aphasia, then, was purely atactic. The processes of thought went on in his brain, and his ideas clothed themselves mentally in words, but the faculty of utterance was lost almost entirely. This, moreover, was not due to any paralysis of the tongue, for after the first four days that organ could be moved about or protruded with perfect freedom.

It will have been noticed that the faculty of writing remained in its integrity. There are but few cases of aphasia on record in which this has happened. These cases are valuable because they afford proof that the faculty of speech and the faculty of writing are not subserved by one and the same portion of cerebral substance (cf. p. 100).

The softening in this case resulted from embolism of the middle cerebral artery. It was first pointed out by Dr. Kirkes, and it is now well known that embolism of this artery is more certainly followed by atrophic softening than is that of any

other division of the carotid, and that the cause of this is the deficiency of anastomotic branches connecting this artery with others of the circle of Willis. Dr. Jackson has published a large number of cases in which loss of speech and diseased heart co-existed, and, though he had no post-mortem examination to assist him, inferred with a high degree of probability that the connecting link between the two conditions was embolism of the artery in question. The case just given confirms this opinion, as also do the following seven cases.

CASE VI.—Edward S., æt. 34. Admitted December 21, 1859. Six months previously had received a heavy blow on the left temple, and his eye had remained partially closed ever since. Six weeks ago began to feel numbness in the legs, which had not, however, prevented him from working as a gardener till two days before admission. On Jan. 9 he had a sudden attack of giddiness, followed by delirium; and later by ptosis of the right eyelid and some indistinctness of speech. Still later he entirely lost the power of speech, making merely inarticulate sounds. The ptosis disappeared the day before his death, which occurred eight days after his entire loss of speech.

*Post-mortem.*—The arachnoid and pia mater matted to each other and to the surface of the brain in several places; this was apparently an ancient lesion. The vessels at the base of the brain were atheromatous, and there was some old lymph deposited about them. The left middle cerebral was completely obstructed by a plug of fibrine. Below the plug the artery was somewhat dilated, forming a kind of small aneurism. This was in the fissure of Sylvius, near the locus perforatus anticus. A little further outwards the cortical part of the hemisphere was much softened. This softening extended a very short distance, the medullary part being firm. The fornix was also much softened.

In this, as in the post-mortem accounts of all the succeeding cases, the various convolutions are not accurately distinguished from each other; but the description leaves very little doubt that here, as in the last case, the part diseased was the posterior portion of the inferior frontal convolution. The case is a very important one, because of the absence of paralysis, and the limitation of the lesion to a small portion of the gray substance.

CASE VII.—J. C., admitted for supposed typhoid fever. "No perseverance could get a word from him. He rolls his eyes quickly and uneasily from side to side; does not heed questions, and makes no attempt to put out the tongue." He died a few days after admission.

*Post-mortem.*—A small mass of fibrine filled without distending the left middle cerebral artery. It probably was not large enough entirely to stop the blood-current. In the right middle cerebral was a smaller obstruction of the same kind. There was no softening. In the heart were ragged fibrinous masses sticking here and there to the depressions in the walls of the ventricles, and it was concluded that the clots in the vessels were derived from these. The valves were all natural in the heart. *P.-M. book*, 1864, p. 233.

CASE VIII.—Nicholas C., æt. 36, admitted August 24th, 1864, with diseased heart. On September 2d he had a sudden attack of loss of consciousness, and on recovering from it was found to be almost speechless. The only words he could be got to utter were "can't" and "yes." Sometimes when bidden he would put out the tongue; sometimes say, "Can't." He soon, however, regained the power of saying a few words, and used them rationally; though mostly he answered all questions by "yes." There was a certain amount of paralysis of the right arm, and the mouth was slightly drawn to the left. He died rather suddenly on September 21st, having called out "nurse" some twenty minutes before his death.

*Post-mortem.*—Soft fibrinous vegetations on aortic valves. Fibrinous blocks in spleen and kidneys. A considerable block of fibrine distended the left middle cerebral artery about two inches from its origin. The plug was short—little longer than its width; it had been arrested at a bifurcation. On the upper surface of the left hemisphere were a few minute spots of extravasation; and on slicing the brain horizontally many circumscribed patches of yellow softening were seen in the white matter. These were of small size—generally smaller than a fourpenny piece; yellow in the centre and red at the edges. They were most abundant in the posterior part of the hemisphere.

CASE IX.—Emma L., æt. 17, admitted December 23d, 1864, with diseased heart. Ten days later became suddenly unconscious, and on coming round was found to be speechless. The only words of which she made use were "no" and "yes." A few days later she became hemiplegic on the right side. There was no difficulty in swallowing. On January 28th, she began to cry out, "The Bible, the Bible," with wearisome monotony, when disturbed or uneasy; and this expression, to which she attached no meaning that could be discovered, was constantly on her lips till near her death, which occurred on Feb. 12th.

*Post-mortem.*—Aortic valves very extensively diseased, and covered with long soft vegetations. Fibrinous blocks in spleen and right kidney. There was a block of fibrine at the bifurcation of the basilar artery, completely obstructing it; another at the origin of the left middle cerebral, of large size; others of smaller size in more remote branches. All these plugs were of decolorised fibrine. Prep. 182, S. viii.

The whole left cerebral hemisphere, except a small portion at each extremity, was softened, and was readily excavated by drops of water.

The gray matter on the surface was of a dull brown. The left corpus striatum was softer and yellower than that on the right.

CASE X.—Richard C., æt. 45, admitted October 30th, 1850, with hemiplegia on the right side. This had come on gradually, without any distinct fit preceding it. "He was quite conscious and intelligent, but quite unable to articulate distinctly. In trying to speak, he uttered sounds, but they were apparently no part of the words he wished to pronounce." He remained in the hospital till his death, February 1851. During this period he varied in his condition; and at one time partially recovered the use of his paralysed limbs, and was able to say a few words. After this there was a relapse into his former condition.

*Post-mortem.*—Blood-coagula of long standing were found obstructing the basilar artery, both posterior cerebral, and the right carotid. The obstruction in these was only partial, a channel of one-third of the natural calibre remaining in the right carotid.

In the left carotid the obstruction was much more complete. Thick coagula lining the inner membrane were found just at the entrance of the artery into its canal; and on tracing the vessels upwards these coagula increased in thickness; so much so, that at the cavernous sinus, and above this point, the vessel was all but blocked up, there being a canal left scarcely large enough to admit a small pig's bristle. These coagula extended into the commencement of the anterior and middle cerebral arteries.

Both hemispheres were remarkably vascular. This was the only morbid appearance in the right hemisphere; but the greater part of the left was softened, and in parts quite different.

There was fibrinous deposit of long standing on the mitral valve.

A full account of this case, by Dr. Bence Jones, will be found in *Path. Trans.* 1850-1, p. 40.

CASE XI.—Emma C., æt. 21, admitted December 24th, 1862. Had had some kind of apoplectic attack shortly before admission, as to which no definite history was obtainable.

She was paralysed on the right side both arm and leg, but not the face. The tongue was protruded without any difficulty, and in a straight line. Her expression was intelligent, but her speech was unintelligible; the words being clipped and running one into another. In this respect, however, she improved; so that on January 13th she was reported to "answer questions rationally, but often to miscall things." There was a loud systolic murmur. She died January 16th.

*Post-mortem.*—Disease of mitral valve, on the flaps of which were fibrinous vegetations. Fibrinous block in left kidney. Complete plugging by embolism of *both* middle cerebral arteries, and consequent extensive softening on both sides.

CASE XII.—George H., æt. 17, was admitted December 21st, 1864, with disease of heart and ulnar aneurism of the right arm. On January 10th he had a sudden attack, in which he lost consciousness. This

was not followed at once by paralysis; but on the 20th he had a second attack, and the following note of his condition was taken on the 22d: "Conscious, but speechless; looks about him with much of his usual expression; opens the mouth at bidding without putting the tongue out; groans in answer to questions, as though he would reply to them if he could. The right arm is completely lax, and appears quite palsied. Left angle of mouth very slightly drawn." The same night he died.

*Post-mortem.*—Old disease of mitral valve. Fibrinous soft vegetations on the flaps. Fibrinous blocks in spleen and right kidney.

The middle cerebral artery as it lay in the left Sylvian fissure was surrounded and embedded in an apoplectic clot. The coagulum was followed into the middle of the left hemisphere, where, between the base of the brain and the floor of the ventricle in the middle lobe, was an extravasation as large as a hen's egg. A small opening was discovered in the artery near the beginning of the effusion of blood; but it appeared uncertain whether this had not been made artificially. At the origin of the right middle cerebral was a small mass of decolorised fibrine, which must have quite blocked up the mouth of the vessel.

In the subarachnoid cavity, opposite to the end of the left Sylvian fissure, was a little extravasated blood. The brain was generally firm.

The rupture of the left middle cerebral artery is equivalent to embolism of that vessel, so far as regards the nourishment of the parts to which its branches run. I have therefore classed this case with those in which an obstruction was found in the artery. These are all the cases of such obstruction which I can find in our records, excepting some few where the patient died from the effects of the first shock without recovering consciousness, and which are therefore useless for the present inquiry. We have then eight cases in which the part of the brain supplied by the left middle cerebral artery is cut off from its blood-supply; and in all of these the faculty of speech is much impaired. In four of these cases, it is true there was more or less obstruction of the corresponding artery on the right; but omitting these, there still remain four others in which the left vessel was alone affected. With these stands in striking contrast the only case I can find in our registers where there was embolism confined to the *right* middle cerebral. In that case (P.-M. book, 1860, p. 116) there was a clot completely obstructing the right artery from the carotid to the island of Reil, and extensive softening of the brain-substance thus deprived of its nourishment; and yet the patient retained the faculty of speech in its integrity.

I now pass on to some cases in which the left middle cerebral was not itself obstructed, but the carotid, of which it is the chief intracranial branch. When either carotid is blocked up, whether by ligature or other impediment, as a rule no grave head-symptoms are produced, nor atrophic brain-softening, because of the free anastomosis provided by the circle of Willis. When, however, as sometimes happens, the anastomosis is not sufficient for the purpose, and softening does occur, those parts are most apt to suffer—as Dr. Todd pointed out—which are dependent on the middle cerebral branch. For this branch has a much less free communication with the opposite side than have the rest (cf. *Med.-Chirurg. Trans.* xxvii. 321). The three cases which follow may therefore really be considered as equivalent to cases of partial obstruction of the middle cerebral artery.

CASE XIII.—J. G., August 1864. Two days before this man's death his left common carotid was tied by Mr. Lee. In the interval between the operation and death he was speechless. "He lies in a semi-conscious state; evidently recognising people, but being unable to respond to questions."

There was no post-mortem examination of the head.

CASE XIV.—William S., æt. 60, admitted March 10th, 1860. Two days before this, while following his occupation as clerk, began to lose power in the right side without any definite fit. There was on admission complete lax palsy of the right leg, palsy with some rigidity of the right arm, little if any paralysis of the face. He appeared to understand what was said to him; but to be unable to find the words wherewith to reply. He used the same word several times, with long pauses between; the articulation being, however, clear. "How are you?" "Well—well—well." "Any pain?" "Flying about—flying about—flying about." On April 2d he had an epileptic fit and died.

*Post-mortem.*—The right hemisphere was perfectly healthy. On the left side all the upper part of the hemisphere was in a state of white softening, forming a pultaceous mass. The softening extended down nearly to the level of the ventricle, and affected the superficial portions of the optic thalamus and corpus striatum.

The arteries of the brain were extremely atheromatous; and it was noticed that the left carotid was far more affected than the right. Its walls were much thickened in places, and in others the artery was irregularly dilated. In one place, by the side of the clinoid process, the artery was closed by a coagulum. This, however, was red in colour, and not adherent to the side of the vessel.

CASE XV.—Thomas B., æt. 36. Had fallen down in a fit, and was brought, on July 4th, 1865, to the hospital. The following is the

registrar's account of his condition: "He obeys feebly; but is quite unable to speak or protrude his tongue. There is a rigid condition of the muscles of the left arm, without total palsy. He swallows ill; has a flushed or sunburnt face, and an expression of intelligence contrasting strangely with his inability to speak or otherwise respond to questions. There is no facial palsy." He lived only three days, and died without any notable change in the symptoms.

*Post-mortem.*—Long cord-like coagula were drawn out of both carotids from the base of the skull. These were not adherent, and uniformly black. Many arteries at the base were similarly occupied. The basilar and both exterior cerebral were thus affected. The vessels were atheromatous.

The brain was much congested; the gray matter dark, and the pia mater vascular. The valves of the heart were natural.*

Had this man not died, his case might have been quoted as contradicting Broca; for it was the *left* arm which was rigid, the right side being unaffected. But the post-mortem examination showed that both sides of the brain were alike implicated. In the absence of any other lesions, we must attribute the symptoms to the formation during life of coagula in the diseased cerebral vessels. Death occurred so soon after the seizure that the coagula had not undergone any change.

I have now given eleven cases of aphasia in which there was obstruction of the cerebral vessels. So frequent is this coincidence, that a good observer has supposed that loss of speech is a symptom of general occurrence in cerebral embolism, in whatever artery the clot may be. But in reality the symptom only occurs when the obstructed artery is the left middle cerebral, or more rarely the left carotid.† The cases which follow show, moreover, that the symptom may occur without any embolism at all. All that is necessary is that certain parts of the brain to which the above-mentioned vessels go shall be diseased; and whether this disease be the result of embolism or of other causes is a matter of indifference (cf. *St. George's Hospital Reports*, i. 266).

CASE XVI.—Charles C., admitted April 25th, 1866, having fallen from a height and injured his head and back. There was incomplete paraplegia. "He was quite sensible, and evidently understood all that was said to him, but was unable to answer questions." The next day

* On referring to the account of the post-mortem examination in this case, I find that the coagula extended into both *middle* cerebral arteries, as well as into those mentioned in the text.

† Obstruction of the basilar may also produce aphasia, and not rarely does, by producing disease of the pons Varolii; but I have purposely omitted from this paper the consideration of loss of speech from disease of the pons.

he managed to say a few words, complaining of pain in the head; but after this he again became quite speechless, and so remained till his death, four days from admission.

*Post-mortem.*—Fracture of sixth cervical vertebra and bruised spine. "In cutting into the left hemisphere, a large amount of bruising was found in the gray matter on its external aspect. The brain here was greatly softened, and blood was effused in small patches. The bruising involved the posterior portion of the left anterior lobe and a small portion of the adjoining middle lobe. Each ventricle contained about 3iv. of fluid. The septum was firm."

Although the exact convolutions softened are not mentioned, the description applies exactly to Broca's region. The cerebral injury, moreover, appears to have been limited to that region or its close neighbourhood. It would appear that there was a similar limitation of the lesion in the following cases; though here also the precise position of the lesion is not so rigidly defined as to enable us positively to assert that it was in the posterior part of the third convolution. That such, however, was the case, there can, I think, from the description, be very small doubt.

CASE XVII.—E. J. was admitted in September 1854, and remained in hospital for two whole years, till his death. A full account of his case was published by Dr. John Ogle, in Beale's *Arch.* i. 81. For my present purpose it is sufficient to say that he had numerous epileptic fits, chiefly affecting the right side, with convulsive movements; that there was occasional numbness and loss of power on this side, and sometimes swelling and pain; that his speech was very much affected, and sometimes completely lost; that he miscalled objects and mispronounced words, saying, for instance, "carsel" for "candle," "messin" for "medicine," "called" for "caused," &c.

*Post-mortem.*—The dura mater, as a whole, was natural, excepting at one part on the left side, corresponding to the upper and outer portion of the left cerebral hemisphere at about its middle. Here it was firmly adherent to the brain to about the extent of a shilling; and in a slight degree around this adherent portion its inner surface was coated by a thin film of recent fibrine. This adhesion was effected by means of a callous fibrous deposit, in which was a mass of firm yellow substance. The whole of this indurated material was so intimately united with the nervous substance as to have the appearance of a cicatrix, penetrating it to about the distance of an inch; and on attempting to remove it, much of the brain came away with it. The brain-texture adjoining was somewhat softened.

I come now to several cases in which the lesion was much

more extensive than in the two last, not being confined to Broca's region, but most certainly including it.

CASE XVIII.—Susan S., admitted July 1863. This woman was a children's nurse, and a fortnight before admission had been out in the sun on a very hot day. She was taken with giddiness, and fell into a pond by which she was standing. She was much frightened by the accident, and ever afterwards had a strange manner. She miscalled things, so that no one could understand her. There was also some difficulty in deglutition. On admission there was no paralysis; but a few days later the right arm became spasmodically flexed, and so rigid that no justifiable amount of force could straighten it. The next day she died.

*Post-mortem.*—The exterior two-thirds of the left hemisphere were broken down into a mass of greenish purulent matter. The left lateral ventricle was full of purulent fluid. There was a large cavity containing pus in the middle lobe of the left hemisphere.

CASE XIX.—John G., æt. 62. This man was admitted August 27, 1856, for hemiplegia and complete loss of speech. These symptoms had followed on a fit some eight days previously. His urine was highly albuminous. Towards the end of September he could utter a few words; but no other amendment occurred, and he died from gradual exhaustion November 19.

The notes in the registrar's account state the hemiplegia to have been on the *left* side; but I think this must certainly be an error, as it is quite incompatible with the post-mortem appearances.*

*Post-mortem.*—The inner surface of the dura mater in one or two places covered by a thin layer of blood-stained fibrine, and the arachnoid at the upper part of both hemispheres thickened and opaque.

On the left side the upper and middle portion of the cerebral hemisphere was yellowish and "boggy." There was extensive softening of the middle portion of this hemisphere, extending from the surface internally to the base of the left optic thalamus and corpus striatum, the lowest parts of which were involved in the softening. The fornix was softened. There was much fluid in the ventricles.

Kidneys dwindled, granular. A small abscess in one, communicating with a large collection of pus in psoas muscle. Valves of heart atheromatous.

CASE XX.—Joanne C., æt. 16, admitted December 12, 1864. For a week had been ill, chiefly from pain in the left ear. On admission there was no paralysis of the limbs or face. She, however, either could

* I think it is more probable that this was a slip of the registrar's pen, than that the case was one of those excessively rare ones in which the paralysis is on the same side as the lesion, and which are explained by Longet by the absence of decussating fibres in the pons and medulla. *Tr. de Phys.* ii. 222.

not or would not protrude the tongue. The expression of her face indicated intense pain, and she groaned much. In answer to every question she made the same invariable answer, "Our father." She never used any other words. Two days after admission she was found to have lost the use of the right limbs, and there was also great difficulty in deglutition. She died December 16.

*Post-mortem.*—Extensive caries of left temporal bone. The dura mater covering the left hemisphere distended with pus. The greater part of the arachnoid cavity on this side occupied by thick pus, which had caused the convolutions to be levelled and depressed. The pus covered the greater part of the top and outside of the hemisphere, extending more forwards than backwards. It had extended to the base under the anterior and posterior lobes only, and it covered the whole inner aspect of the hemisphere down to the corpus callosum. The quantity was sufficient to cause considerable compression of the brain.

There remain yet several cases in which it cannot be stated with certainty that Broca's region was affected. In all of them, however, the lesion was in the left hemisphere, and in all so extensive that it is most reasonable to suppose that either that region was itself involved, or the fibres by which that region is connected with the parts below.

CASE XXI. — Archibald B., admitted November 30, 1860. Had enjoyed good health till a fortnight before admission, when he had felt a numbness and loss of power in the right foot. The paralysis had gradually crept up the limb, occupying two days in the process. His right shoulder then became similarly affected, and soon after the whole upper extremity.

When admitted there was complete lax paralysis of the right arm and leg, but no facial paralysis. His mind was clear and his speech articulate, though he was very slow in answering questions. A month later his articulation became very indistinct, and two days after this he entirely lost the power of speech. For the next fortnight he remained quite speechless, though apparently quite sensible, and then died from pleuro-pneumonia.

*Post-mortem.*—The brain wet; the ventricles rather distended with fluid; the convolutions flattened; the membranes healthy. The greater part of the left hemisphere exhibited extreme softening. This commenced rather above the level of the corpus callosum, and reached down nearly but not quite to the base of the brain. It involved the middle* and posterior lobes. The optic thalamus was invaded to

* The middle lobe, in the sense in which it is used in our registers, includes a considerable portion of the hinder part of the anterior lobe, if this latter be admitted to go back as far as the furrow of Rolando.

a great extent, but the corpus striatum was nearly if not entirely intact. The softened portion was of a dirty-white colour and almost diffluent. The other parts of the brain were healthy.

CASE XXII.—Sarah H., admitted January 26, 1859. This woman had had a fit of some kind a fortnight earlier, and since that had been speechless and paralysed on the right side. The leg was relaxed, the arm rigid. Whatever question was put to her, she laughed, and said, "Yes." She had another fit in the hospital, and died February 12.

*Post-mortem.*—On the inner surface of the skull, covering the anterior part of the left hemisphere, was a deposit of new bone, which gave the bone internally a convex instead of a concave outline, and of course pressed upon the brain. The convolutions were flattened. In the substance of the left hemisphere was a peculiar deposit, without any definite structure or exact limits, which pushed over the septum to the right side, and caused the left hemisphere to be nearly twice as broad as the right one. The septum and central bodies on the left side were slightly softened.

CASE XXIII.—John R., admitted January 1865. He had been picked up in the street in a state of insensibility, and brought into hospital, where he remained till his death, a fortnight later. When he recovered consciousness, he was found to be speechless and hemiplegic on the right side, with lax muscles. The only word he could say distinctly was "No." He "talked apparently with intelligence, but running his words together so that it was impossible to understand him."

*Post-mortem.*—There was a clot of blood of the size of a large hen's egg in the anterior part of the left hemisphere, reaching from nearly the front of the brain to the posterior margin of the corpus striatum. It had broken through the surface of the corpus striatum, and a coagulum was found in the left lateral ventricle. The brain-substance about the clot was softened.

CASE XXIV.—William S., aged 30, admitted into hospital in February 1860. Two years before this had fallen from an apple-tree upon his head, and ever since had suffered from fits. His intelligence had gradually weakened, and he had also become paralytic on the right side. "Although he could articulate perfectly, he had great difficulty in finding words or the ideas which they should represent. He was for a long time unable to recollect his surname. He was in the habit of repeating the same word in answer to all questions. He seemed quite aware of his own deficiency, and used to laugh in a childish way whenever the hesitation was unusually great." Besides these head-symptoms, he had heart-disease, of which he died somewhat suddenly a fortnight after admission.

*Post-mortem.*—Extensive mitral disease. There was a large cyst full of serous fluid in the left cerebral hemisphere external to the lateral ventricle. The surface of the brain at this part was flattened, and a large part of the hemisphere was gone. The membranes were

matted together, and a large quantity of fluid was contained in the subarachnoid space, which was much enlarged and occupied by a great quantity of cellular adhesions. The principal collection of fluid was bounded externally by thickened pia mater, and internally by the tissue of the corpus striatum and optic thalamus. The latter bodies were almost but not quite destroyed, a small portion being still left projecting into the ventricle. The cerebral substance here was changed in a peculiar manner, being hard and of a brightish-yellow colour. At the lower part of the opposite middle lobe was a small patch of similar degeneration. There was, however, here little if any loss of substance.

CASE XXV.—Philip M., æt. 50, admitted May 10, 1865, with right hemiplegia and complete loss of speech. He had had a fit a month previously, and while gradually recovering the effects of this he had a second three days before admission, which left him in the condition described. At first he was unable to protrude his tongue, but this soon passed off. He remained two and a half months in the hospital without any improvement, and left still speechless. After he left he gradually recovered a considerable degree of power in his limbs, and travelled about the country. But he never recovered the power of speech, as I learnt from his friends. He died about a year after leaving the hospital. There was no post-mortem examination.

*General result of the cases.*—We have, then, twenty-five cases in which speech was lost or much impaired, and in all of them there was disease of the left hemisphere. This was shown either by post-mortem examination or by sure symptoms during life. In some few there was, it is true, disease on both sides of the brain, but in the large majority the lesion was confined to the left. There is not one single case in our registers in which speech was seriously impaired and the left side of the brain found sound. These cases, even by themselves, would be strong evidence of the correctness of Dax's statement; but when taken in conjunction with the results of other observers, they furnish the most irresistible proof that, in some way or other, the left hemisphere is more intimately connected with the faculty of language than is the right. Thus in thirty-one cases of aphasia collected by Magnan at the Bicêtre and Salpetrière, there was without exception paralysis on the right side. M. Trousseau, himself an opponent of Dax and Broca,* collected in 1865 all the cases of aphasia he could find. In 125 of these cases there was palsy on the right side, in ten only on the left.

* *Bull. de l'Acad. de Méd.* xxx. 663.

It has been, however, objected that disease of the left hemisphere is very much more common than disease of the right, and that therefore it is only natural that there should be more cases of aphasia associated with the former than with the latter lesion; in fact, that disease of either side will equally produce aphasia, and of that side more frequently which is itself more frequently diseased. This objection would be a sound one, were disease of the left hemisphere more usual than that of the right in any such proportion as 125 to 10. But this is far from being the case. It would indeed appear, from such statistics as I can find, that the left side of the brain is really more frequently the seat of disease than is the opposite one, but only in a very small proportion. In 74 cases of hemiplegia which I collected at St. George's, the right side of the body was paralysed 43 times, the left 32.* Andral gives 73 cases of right hemiplegia against 63 of left; Baillarger (at the Salpetrière) 58 cases of right palsy, 52 of left. Putting these figures together, we have 174 cases in which the right side was paralysed against 147 in which the opposite side was affected. It is quite plain that this slight difference is utterly inadequate to account for the statistics of aphasia given above.

Admitting, then, Dax's statement to be correct, what is to be said as to the exceptions to his law? How are they to be explained? In the first place, I would remark that they are excessively few. M. Trousseau, with every wish to produce evidence against Dax's and Broca's theory, could only collect ten such. In seven of these ten there was no post-mortem examination. There was paralysis of the left side, and it was inferred that the right side of the brain was diseased, and that the opposite side was sound. But to this it was objected

* It would be rash to draw any very certain inference from so few cases as seventy-four. I cannot, however, but notice that it would seem from these seventy-four cases that women are more liable to hemiplegia on the left side, men to hemiplegia on the right. This is probably in part accounted for by the unexplained fact that hysterical hemiplegia is almost always on the left side. Thus, in Todd's *Lectures on Nerv. System* are six cases of hysterical hemiplegia. In five the palsy is on the left, in one only on the right side. Landouzy (*Traité de l'Hystérie*, p. 114) gives seven cases, and in all the palsy is on the left. Briquet, again, states as the result of his very large experience, that hysterical palsy is three times more frequent on the left than on the right.

with much truth, that disease of one hemisphere does not in any way imply soundness of the other. There may in these cases have been a lesion on the right causing left hemiplegia, and a lesion on the left in Broca's region causing loss of speech but no paralysis. This lesion may have been limited to the gray matter of the surface; and there are several cases in this paper which show that there may then be loss of speech but no paralysis. (conf. cases xvi., xvii.) How careful one must be in estimating these apparently exceptional cases, if there be no autopsy to guide us, is shown by case xv. Had there been no examination of the brain in that case, it might have been quoted as contradicting Dax; for the left arm was affected, not the right. But, on post-mortem examination, it was found that there was obstruction in the vessels of both hemispheres. Secondly, it must be remembered that there are some few cases on record—so few indeed as to make this explanation a very improbable one—where disease of the left hemisphere has been accompanied by hemiplegia on the same side, and not by crossed paralysis, as in the vast majority of cases. A third, and much more probable explanation of these apparent exceptions is one which, to the best of my belief, has not yet been advanced. The loss of speech may have depended on disease of the pons Varolii,* and I have already stated that in such cases the lesion may be either on the right or on the left, and have mentioned what I believe to be the explanation of this, viz. the decussation of the nerve-fibres in passing through the pons (conf. note, p. 101). Lastly, in those very rare cases in which the autopsy has revealed a sound left hemisphere and a diseased right one, we must content ourselves for the present with the explanation already given in a preceding page (p. 88).

* I have not been able to refer to all M. Trousseau's exceptional cases. But to one of them at least the above explanation will apply. This is a case recorded by Dr. Jackson (*Lond. Hosp. Rep.* i. 437, xix.), and included, as are the rest of Dr. Jackson's cases, in Trousseau's collection. The patient in this case was aphasic, and paralysed in the *left* arm and leg; but he was also paralysed in the *right* side of the face. Dr. Jackson explains this by supposing there to have been a lesion on each side of the brain. I think it more likely that there was a single lesion in the pons Varolii; it being well known that such "alternate paralysis" is the ordinary accompaniment of unilateral disease of the pons.

The left hemisphere, then, being specially concerned in speech, the next question is, are all parts of it equally so, or is this faculty located in some limited portion of it, as Broca would have us believe? It would be easy to bring forward abundant cases from our records, showing that most extensive lesions may occur in the left hemisphere, and even in its anterior lobe, without the slightest impairment of speech. I will, however, only give one striking example of this.

Frederic F. died in St. George's Hospital, February 15, 1867. His speech had been perfectly good up to the day of his death. The autopsy showed the following lesions in the head. There was a scalp-wound on the left frontal eminence. The bone here was fractured slightly without any depression. There was pus between the bone and dura mater. This latter was thickened and perforated, and there was a circumscribed abscess in the left anterior lobe, extending from the extreme front back to the corpus striatum, and downward to the orbital plate. In front it came within half an inch of the external surface. The brain-substance round about was yellow, softened, with numerous red puncta. The corpus striatum and optic thalamus on the left side were softened, and the corpus striatum in great part broken down. There was much fluid in the ventricles, and softened fornix. Broca's region was carefully examined, as also the corresponding part of the right hemisphere, and was perfectly sound.

It would appear, then, that all parts of the left hemisphere are not concerned in the matter, nor all parts of the anterior lobe. What part, then, is? The eight cases of embolism of the left middle cerebral artery show that it is some part supplied with nutriment from that source. The rest of the cases harmonise with this conclusion. Such a part, with much besides, is the posterior part of the third frontal convolution; so that our hospital records are compatible with Broca's opinion. The accounts of the post-mortem examinations in the cases I have recorded, made by gentlemen who at the time were not conversant with Broca's theory, and who have therefore not taken pains to distinguish with precision the separate convolutions, do not allow us to go much farther than this. Still, cases v., vi., xvi., xvii., in which Broca's region was, if not exclusively, yet specially the seat of lesion, lend great probability to the accuracy of his conclusion. At any rate, these cases would seem to show that the organs of language are, if not in the exact position which he

has assigned to them, in close proximity to it. Cases of aphasia are, however, by no means uncommon; and it can hardly be doubted that, when so many observers have their attention turned to the subject, pathological observation will soon give a certain answer to the question.

WILLIAM OGLE, M.D.

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*Additional Note to p.* 88.

I wish to make a few additional remarks on the hypothesis dealt with in this page. It may be said, and with justice, that if that hypothesis (Dr. Moxon's) be accepted, we have in it a sufficient explanation of the unilateral localisation of the organ of speech, but no explanation whatsoever of that localisation being almost always on the left side, in preference to the right. It would be as easy to educate the organ on the right as the corresponding organ on the left; and, if it be a matter of indifference, we should expect the selection to fix as often on the one as on the other. If, in answer to this, the almost constant selection of the right hand to perform certain duties be brought forward, it may be objected that the cases are not quite analogous. It may be said—though I do not think this is really the case—that the preëminence of the right hand is not the natural consequence of our organisation, but is merely the result of the bias given knowingly by the parent to the child. The parent, himself right-handed, puts the pen, the knife, or other instrument into the child's right hand, and thus the child grows up to use that hand from habit in preference to the other. In the case of the brain, no such intentional selection can of course occur. If, then, the left hemisphere be almost invariably chosen by nature for the process of education, there must be some difference or other between the two hemispheres which determines that choice. Can this difference be pointed out? I think it may. Owing to the well-known arrangement of the arteries which rise from the aortic arch, the left hemisphere receives by the carotid a more direct, and therefore freer, supply of blood than does the right. Probably from this cause, but at any rate from some cause or other, the convolutions of the anterior lobe of the left hemisphere are developed at an earlier period than those of the opposite side. This has been made out by the conscientious researches of Gratiolet, whose authority in such a matter no one will call in question. In this fact we have, I think, a sufficient explanation of the matter. Nature selects for the process of education that anterior lobe which is the more mature, and therefore the more apt, or alone apt at that period, to receive it. In this same fact we find a probable reason for most men being right-handed. The right hand, being governed by the left hemisphere, will have the same

advantage in time over its fellow as has the left hemisphere over the right one. Its education will begin earlier, and, where one hand alone has to be educated, this will be the one chosen.

This suggestion is, at any rate, sufficiently probable to deserve further inquiry. In any future post-mortem examinations of left-handed persons, or of aphasic patients who have the right hemisphere alone diseased, it will be well to see whether there is not some abnormal arrangement of the arteries which spring from the arch, and whether such arrangement does not give an advantage to the right hemisphere in its blood-supply. Should such turn out to be the case, it will afford strong evidence in favour of my suggestion. Should it not so turn out, we shall still have the undoubted fact that the convolutions of the left anterior lobe are developed earlier than the corresponding ones of the opposite side; but some other explanation must be found for this than the arrangement of the blood-vessels.

# VIII. REPORTS OF CASES OF NERVOUS DISEASE.

## DELIRIUM.

THE symptom which I have taken as the subject of this communication is one of so much moment that any discussion of it from the stand-point of clinical experience can scarcely be otherwise than acceptable to those who, like the writer, are more anxious to be medical practitioners than pathological professors. Duly to appreciate vital phenomena, and to influence them effectively, must ever be the chief aim of the real physician; and those inquiries must ever have most interest for him where morbid actions have not yet eventuated in irremediable lesions. Holding the belief that the so-called diseases are by no means of stereotyped constancy and uniformity, he will be much more anxious to understand the individual well than to name the disease with precision. Diagnosis to him is truly all-important, but it must be *real* diagnosis, which concerns itself mainly with the recognition of those points and features which are of essential importance to the correct management of the case, and which are by no means always the most apparent.

CASE I.—M. A. B., æt. 40 to 50, a coffee-house keeper; admitted Oct. 19th, 1865. Was in a state of extreme hysterical excitement when admitted; it took four persons to put her into a shower-bath; all night she was very noisy and obstreperous, abusive and quarrelsome, apparently unconscious.—20th. Bowels well acted on by castor-oil this morning; stools passed in bed. Is now tranquil; lies dozing. When spoken to she grins in a silly way, keeping the commissures of her lips apart for some length of time; the gums are then seen to be red and swollen. When questioned, she answers in a silly half-laughing manner. Breathing quiet; forehead cool; eyes not injected; has had several doses of valerian and cannabis indica, and a blister to neck. Her brother states that her malady has been entirely brought on by her drunken husband's misconduct, which seriously interferes with her

business; she has been insensible all the past week. Morphiæ muriat. gr. ½ + extr. hyoscy. gr. iij. h. n.—21st. Became noisy again last night, and had two doses of antim. pot. tart. gr. ½, besides the pills; but it is not certain how much of the latter was got down. However, she slept well, and has taken food this morning. At present (3 P.M.) she is tranquil; but some part of the morning was again noisy, and required restraint. Pulse steady and good; but an hour later I found it weak and irregular; lips fully red. She refused to put out her tongue when asked; said she did not choose. Rept. pil. h. n., ant. pot. tart. gr. ¼ + mist. C. ℥j. 4tis horis.—22d. Is tranquil and rational; had a good night; says she remembers nothing of her illness. Pil. c. mist. quater die; rept. pil. h. n.—23d. Is rational and quiet, pulse 74, quiet, soft. Wants to go home. Mist. quinæ ℥j. ter die; p. c. pil.; porter Oj.—25th. Seems more inclined to ramble to-day; says she can't make out where she lives, and that she did not sleep well last night; but it appears she did. Manner rather sharp; talked very strangely to her friends yesterday; remembers now all her story, and relates it.—28th. Remains in an excitable state; talks volubly to me; says she can't remember where she lives; but knows that her children are left alone, and is very anxious to get back to them; sleeps and eats fairly well, but is apt to get over-excited at times, and to ramble then. Left hospital at her own desire next day.

There can be no doubt in this instance that the cerebral disorder was the result of mental causes, anxiety, and vexation. The pathological condition which these induced was not simple exhaustion and depression, as one might have expected, but great irritation, which was calmed very favourably by the tartar emetic, and recurred in some measure when the latter was discontinued. Those who think that this drug is a destructive agent must have a very different experience of it to mine and that of many excellent observers. Like several of our best remedies, it is very capable of doing harm, if not judiciously administered; but this is no reason for abstaining from its use in appropriate cases. The conception which appears to me best to fit the operation of tartar emetic is, as I long ago suggested (vide *Brit. Med. Journ.* Mar. 1857), that it acts as a *tissue-sedative;* and this whether it be administered for the cure of inflammation or extreme nervous excitement. By a tissue-sedative I mean a drug which lessens the nutritive activity of the part, so that its altered (morbidly) vital actions go on more slowly; and it attracts in consequence less blood to itself. In the same class as antimony I place such drugs as ipecacuan, col-

chicum, potass. iodid., and mercury. Of all these I believe it is tolerably certain that they act in a diametrically opposite manner to the whole group of nerve-tonics. If quinine, iron, or arsenic cure inflammations, as they do occasionally, I can well understand that they do so by giving tone to relaxed arteries and enfeebled vasomotor nerves, and thereby abolishing the previous excessive flow of blood to the part.* But when antimony arrests asthenic delirium, or ipecacuan an acute dysentery, or colchicum a sclerotitis, I cannot accept such an explanation, because these drugs, according to our best knowledge of their operation, have no invigorating or toning influence upon nerve and muscular fibre, but the very reverse. Ackermann finds that tartar emetic injected into the blood of animals lessens the intravascular pressure or tension, and remarkably diminishes the irritability of the heart. Surgeons are, or used to be, familiar with its relaxant effects in lessening the tonic contraction of voluntary muscles in cases of dislocation.† No one of any clinical observation can admit, I think, that ipecacuan, colchicum, or mercury have other than a depressing effect on nervous and muscular power; and if this be the case, it is not difficult to conceive how, by paralysing vasomotor nerves, they may give rise to increased secretion, hyperæmia, and sometimes actual inflammation, as they do when their action becomes injurious and excessive.

Case II.—H. B., æt. 42; admitted March 8th, 1867. Was in a highly nervous quasi-hysterical state on admission, but not at all delirious or violent. She complained of having taken cold, and of having rheumatic pains in her limbs; but there was no appearance of inflammatory action about the joints. Effervescing citrate of ammonia draughts with excess of ammonia were ordered, and on the 9th camphoræ gr. ij. + extr. hyoscy. gr. vij. in pil. ij. h. s. s. She got no sleep, however, as a noisy patient in the ward disturbed all the inmates.

* This assumption is quite warranted by our experience of their effect in many conditions attended with manifest impairment of the power of cerebrospinal nerves; *e.g.* in neuralgias, some paralyses, and fevers.

† Pécholier states, as the result of his experiments with ipecacuan, that the activity of the nervous system was decreased; there was collapse; the functions of the sensitive nerves were destroyed, while those of the motor nerves and the contractility of the muscles were impaired, but not completely annulled.

The following night, that of 10th, she became very violent, and rushed about the ward. She was removed about 1 A.M. to a separate apartment, put under restraint, and had tr. opii ℥xx. given her.—11th. No sleep during night; got loose this morning, and broke a window trying to get out of it. At present (2 P.M.) she recognises me, and mentions correctly the names of the families with whom she has lived. She answers questions; but was screaming and whistling a little while ago. Head not notably hot; eyes pretty clear; pupils rather large; sounds of heart normal, only the first weak; pulse 115, rather weak. Extr. hyoscy. gr. xx. stat. et gr. x. 3tiis horis; brandy 6 oz., beef-tea, milk. 10 P.M. Is nothing quieter; has been raving and screaming very much. Pulse quick, weak; head rather hot. Recognises me immediately. The cold douche was applied to the head for several minutes, and opii gr. ij. pulv. ipecac. gr. ij. ordered 3tiis horis.—12th. No sleep during night; but seems to be quieter to-day; asks to be released from the hand-straps; passes her urine under her. Pupils moderately large; pulse 108, weak. Takes food tolerably well; but has been made very sick by the pills. Pulv. ipecac. gr. j. + pulv. colchici gr. ij. + opii gr. jß, in pil. ij. 3tiis horis. Her husband says that she has been married to him twelve years; has been getting strange in her ways the last three without any known cause; she has never before been in the same state as she is in now; has never been in any lunatic asylum. She came to the hospital of her own will, without the assent of her husband.—13th. Much quieter to-day, speaking rationally; got excited towards night, and struggled. Is thirsty; but does not like cold fluids. Tongue dry in the middle; pulse 140, sharp.—14th. Had a comparatively good night; slept from 2 A.M. to 9 A.M.; is much more rational, but weak and low; cries, and is desponding; tongue tolerably moist; bowels not open; pulse 100. Pills omitted this morning, as she was sick. Yesterday the urine was red and lateritious, sp. gr. = 1030, not albuminous; it is less turbid to-day. Morph. muriat. gr. j. h. n.—15th. Had a very good night; is quite calm and rational; this morning was very low; pulse 100, extremely soft. Brandy 8 oz., mist. quinæ ℥j. ter die; camphoræ gr. ij. + extr. hyoscy. gr. vj. in pil. ij. h. n.; dec. aloes co. ℥j. + tr. aloes ℥j. cras mane.—16th. Slept well; is quite rational. Bowels opened. She remained in the hospital till the 20th; had no return of delirium, but was mopy and triste; complained of being low and weak, and of having rheumatic pain all over her, which she had had all the winter. She took food well. She wished to return home; had a great horror of returning to the ward where she had been at first; feared she should get out of her mind again.

There was distinct evidence of the incubation of insanity in this case; but the outbreak of delirium may not unreasonably be attributed to the rheumatic disorder from which she suffered extending to and affecting the brain. I have already recorded an instance (*Med. Times and Gaz.* June 16, 1866)

in which violent and fatal delirium occurred in a markedly rheumatic male as the sequel of severe neuralgic pain. I do not mean to assign the chief causation to this rheumatic disorder, as doubtless without the predisposition it would have had no such effect; but it may well be considered as the determining cause. The result of treatment seems to me instructive. Full doses of henbane failed to tranquillise; and therefore I have little doubt that opium, except in very large doses (which I am shy of), would have failed also. The latter is notably more stimulating to the brain than the former; and it has rarely occurred to me of late years to find it efficacious, or indeed appropriate to the *earlier* period of acute delirium. Not much effect can be ascribed to the cold douche; it was not continued long enough, nor was it repeated as it ought to have been to give it fair play. The combination of a nauseant, a depressant, and a narcotic acted very favourably; and I have little hesitation in ascribing to it a curative agency. Improvement commenced almost immediately after its exhibition, and continued uninterruptedly. The simultaneous administration of brandy was advisable to obviate any undue amount of depression. I am much inclined to think that we are not all of us sufficiently alive to the great importance of combined medication. Our predecessors knew well the utility of such procedure, and were careful to add their *corrigentia* and *adjuvantia*.

CASE III.—Miss E., æt. 17, seen on December 11th. Is a hearty strong girl, employed in a respectable public-house; is by no means anæmic. Catamenia regular. To-day she was quite well till some time after a plain mid-day dinner, when she suddenly fell into a state of the most violent hysterical delirium. She threw herself wildly about; two men could barely hold her; she laughed and talked in a wild random way, yet recognised those about her, and particularly distinguished me as having attended her brother, who was ill lately. She went on in this way, screaming frequently so loud that I heard her two doors off in my own house, and thought it was some drunken person. Liq. opii sedat. 3ß made no impression upon her state of excitement, at least not in a short time; and I had recourse to chloroform inhalation, which at once produced a sedative effect, and she became much quieter. A mustard foot-bath was advised; after which she was removed to bed, where she went to sleep in about four hours from the time of the seizure, and slept well till about 4 A.M., and less soundly after. When I visited her about 11 the next morning, she

was quite conscious and quiet, and seemed in her usual state; had no recollection whatever of the excitement she had been in the day before. Her tongue was clean, and she felt hungry. No headache. Some shivering had occurred the previous night before she went off to sleep. The only cause of mental excitement that I could find was that she had a tiff with a brother lately. Quin. disulph. gr. ij. + pil. galbani co. gr. vj.; ft. pil. ij., ter die s.—14th. Had a slight recurrence of the disorder on the night of 12th; seems tolerably well, but is not able for her usual work; head giddy at times; appetite good. Ammon. carb. gr. iv. + tr. valerian. 3ß + tr. cinchon. 3ß + inf. valerian. ℥j. t.d.—17th. Has improved; but had a relapse of the hysterical attack last night; it was of short duration—only ten minutes. Has illusions at times; thinks she sees bears and other animals. Catamenia have appeared in a natural manner. Bowels open. Has flying pains in left side of face, chest, and elsewhere.—22d. Still has hysterical attacks occasionally, but they do not last long. Is much better than she was a week ago. Taking saccharated carbonate of iron.

The cerebral excitement which is apparent in most cases of the hysterical paroxysm was peculiarly marked in this case. It was not only violent, but continuous, and formed the especial feature of the case. How long it would have lasted, had it not been arrested by treatment, it is not easy to say. I should think its duration before the chloroform was given could not have been less than three-quarters of an hour; and at that time there was no appearance of diminution. The absence of any recollection of what had occurred during the paroxysm, and the visual illusions which she had some days after, are points which also mark the especial concernment of the hemispheres. The actual cause of the disorder remains quite obscure. It may, however, be remarked that it occurred a few days before the advent of the catamenial period, a time favourable to the invasion of various disorders. The result in this instance bears out M. Briquet's statement, to the effect that hysterical paroxysms are arrested by a small quantity of chloroform vapour, there appearing to be a peculiar susceptibility to the action of the drug under these circumstances. In hysterical hyperæsthesia this is not the case certainly.

Case IV.—C. F. M., carpenter, æt. 34, admitted May 2d, 1866. This morning he was quite well; was walking about looking for work; had been down to Kilburn, where he shared one pint of beer with a friend, who left him soon after. He was found by a policeman in

Westbourne-terrace, lying on the ground; but he does not recollect getting any farther than the canal-bridge at Maida-hill, about half a mile from the place where he was found. He was seen to fall down; was convulsed while on the ground, where he lay for half an hour, and was then brought to hospital. He was then violently delirious, struggling forcibly, and knocked himself about a good deal in the waiting-room, bruising his head. Restraint was quite necessary, and the strait-jacket was put on. He was quite unconscious. The excitement continued unchanged from the time of his admission (2 P.M.) until 3·30 the next morning, after which he was quieter. Cold douches to the head were used, and he had a sulphate-of-zinc emetic. A quarter of a grain of morphia was injected subcutaneously, and later in the day half a grain. None of these remedies were of any avail. His face was much flushed, and the arteries of his head were full and pulsating rather forcibly. Chloroform inhalation was commenced a little before midnight, and was maintained to about 3 or 4 A.M. It was observed especially that the chloroform anæsthesia passed off at first very rapidly; if it was discontinued for less than a minute, the excitement recommenced. As the inhalation was continued longer, he became more amenable to its influence. At 10 A.M. of 3d he was quiet, went to sleep, and slept till about 1 P.M., when he awoke and was rational. His head had been shaved the previous evening, and ice applied. Beef-tea and milk were given even before the delirium ceased. The tongue being very foul on morning of 3d, a purge of calomel + jalap was administered. His pulse was never low.—4th. No pain in head; mouth feels dry; tongue coated at back. He feels rather weak. Forehead rather hot; pupils rather small; not much appetite. Heart's sounds normal. Arms a good deal excoriated by his struggles. Urine sp. gr. 1020, not albuminous. Has never suffered from fits, nor have any of his family, so far as he is aware. Never passed any worms to his knowledge. He seems to be tolerably temperate from his wife's account; but she says he has taken more beer lately than he should, and has lost his appetite. He has not slept well lately—about three or four hours per night. Has never had ague. Does not think it possible that anything could have been put into his beer on the morning he was attacked. His tongue is bitten at the right edge. The next day some labial herpes appeared, and he was ordered some effervescing potash saline, as the urine was very acid, and deposited a good deal of pink lithates. By May 10th he felt quite well, only weak, and left the hospital a few days after. His wife informs me (April 16th, 1867) to-day that he has remained quite well ever since.

The above history is plainly that of an attack of epilepsy. The sudden fall, the convulsions, the total unconsciousness, and the bitten tongue, put the matter beyond doubt. It is tolerably clear that it was not a case of symptomatic but

of essential epilepsy, unless indeed we consider the labial herpes as the small outward sign of some injurious, possibly influenzal miasm, by which he had been stricken. That the cerebral hemispheres were in a state of intense excitement, very different from their usual condition of stupor after an epileptic paroxysm, cannot, I suppose, be doubted. Neither can it, I think, be a matter of question, seeing that the arteries of his head are described as having been full and pulsating rather forcibly, that all spasm of the cerebral vessels which may have existed at the onset of the fit had ceased, and that the blood-supply was at least not defective. If these conclusions are admitted, it follows that the unconsciousness of the epileptic patient is not necessarily dependent on temporary deprivation of blood, seeing that the same condition was complete while the intra-cranial circulation was free. As also prolonged and profound stupor may exist in epileptic patients as the result of the paroxysm, together with every appearance of determination of blood to the head, it follows that the brain-tissue may be in very different states of functional excitement and depression quite apart from any difference in the amount of blood-supply, and in the immediately preceding morbid phenomena. These points are worth considering in the present day, when several good authorities are inclined to look on varieties in the intra-cranial circulation as the chief cause of its numerous functional disorders. For my own part I do not doubt the influence exerted by the amount of blood-supply; but when I see a pulseless cholera patient able to walk, see, speak, and exercise his mental faculties, and, on the other hand, when I witness complete cerebral torpor coincide with a full and free circulation, I cannot but believe that states of the brain-tissue may be very much independent of the amount of blood supplied to it. The considerable resistance displayed at first towards the anæsthetic, and its gradual lessening as the latter took more and more effect, seem to me to mark very clearly the irritated condition of the brain. In both the last recorded cases chloroform proved very serviceable, and in both the condition was doubtless analogous; but the cerebral excitement in the epileptic was, so to speak, much more persistent and deep-rooted than that of the hysteric, and withstood

much longer the calmative remedy. This is quite in accordance with the ἦθος of the two disorders.

CASE V.—A. M. W., f., æt. 11, admitted Sept. 25th, 1866. Four months ago had diarrhœa severely for three weeks, which reduced her very much. Two days ago had a good deal of epistaxis. Says that she had rheumatism in feet and all over her six days ago. At present there is no rheumatism to be seen; but she avers that she cannot stand on account of pain in her feet and the right side; will not stand when put up. Skin cool; pulse quiet; tongue clean; appetite bad; no thirst. Heart's sounds normal. Is the twelfth child of a family of thirteen. Ferri et quinæ citrat. gr. iv. + aq. ʒj. ter die. Broth diet; milk.—29th. Is much better. She was sent out soon after, but was admitted again, October 4th, in a state of marked delirium; not violent, but quite silly, not knowing where she was. The next day she was conscious, and told me that she was taken worse October 3d, when she fainted away, and did not recollect what happened after. Hands quite cool; pulse feeble and small; heart's action excited; no bruit. Lips of full red colour. Forehead warm; says she has pain there. Right arm somewhat affected with tremor. Had last evening a small blister behind each ear. Says she would like beer and meat. Ferri et quinæ citrat. gr. v. t. d. O. diet; porter Oj. On this she improved at once and continuously. Left the hospital well November 2d, and was seen on November 20th quite well.

The foregoing is the record of a slight case of delirium, but not on that account, I think, devoid of interest. The cerebral disorder was well marked, the quality of the morbid action evident, and the causation clear and intelligible. The organ of the intellect in a frame weakened by poor living, diarrhœa, and hæmorrhage, faltered and failed in its function until its power was restored by good food and tonics. Had the picture of disease been drawn on a much larger scale, the instruction derived from it might have been more forcible, but could not be clearer than that which we gain from the smaller portrait. The pains complained of on the first occasion were, I believe, more neuralgic than rheumatic, at any rate there was no rheumatic fever. The slight tremor of the right arm is suggestive of chorea, and it is almost matter of surprise why this so common nerve-disorder did not supervene in a subject by sex, age, and condition so peculiarly qualified to experience it. Instances of this kind, and they are not rare, oblige us to admit that even under the very same conditions the cerebral structure may be morbidly affected in

various different though more or less similar modes. Chorea and delirium are evidently similar pathological actions, though their *locale* may be different, the motor apparatus suffering in the one, the intellectual in the other. Sometimes the two disorders are highly developed in the same case, as in an instance I gave some time ago in the *B. M. J.* Nov. 3d, 1866.

CASE VI.—T. H. æt. 52, admitted November 23d, 1866. A very strong-made, large, hardy-looking man, who has been concerned on many occasions in the management of a well-known life-boat, and has achieved considerable repute thereby. I saw him first October 29th, when I made the following notes. About six years ago he got a fright while he was out with the life-boat from a man being washed overboard. He felt, he says, "his insides run round," and he became giddy, but did not lose consciousness, and went on with his work. He never got quite right after that night; his head has been affected ever since. Before this happened, on one occasion he was pitched out of the life-boat into a vessel, and hurt his shoulder. His left knee has been injured also in the same way, I believe. At present he is quite unnerved, gets no sleep at night, is troubled then with dreaming and fancies, in fact has a degree of delirium, does not know what he is about. Has much sweating at night, and is either "all on a work," as his wife describes it, with his arms and legs, or else he is busy electioneering, or cutting persons' arms and legs off, or singing, &c. The tip of his tongue gets very sore, too, at night. Every morning for years, ever since he has been ailing, he has vomiting and purging when he gets up in the morning; it does not occur during the day, if he keeps quiet. Is so irritable. "If he worrits himself at all, he gets all in a tremble." Is often obliged to come home and go to bed two or three times a day. His limbs are full of aches and pains in blowy weather. His memory fails very much. He does not seem to have any paralysis. Pupils normal; no squinting. Pulse soft, intermitting. Not anæmic. Head not unduly warm. His manner is quiet; always temperate. Appetite bad; tongue natural. Is worse than he was a year ago. At the time of his admission into St. Mary's he was rather better than he had been a month before, since he had kept quite still and done no work, according to his wife's account. An intelligent gentleman, who was well acquainted with his condition, described him in a letter, with allusion to his vocation, as "his wreck on the Goodwins" (sand).—24th. Urine sp. gr. 1020, acid, of full red colour, clear, not albuminous. Slept tolerably well with morph. muriat. gr. ¼ + extr. hyoscy. gr. iv. Takes strychniæ gr. $\frac{1}{10}$ + acidi nitrici ♏ij. + tr. valerian. ʒj. + infus. valerian. ʒj. t. d. Half diet: cocoa, ale Oj. brandy 4 oz.—26th. Slept last night; appetite better; has not been sick since he came in. His dreams are unpleasant still, but less so than they were. Complains of trembling and numbness and tingling of arms and legs, which come on intermittently. His head aches still very badly, and black spots

come before his eyes after the headache. Soon after his dinner he completely forgets what he has had to eat. Bowels open naturally. Tongue not sore for four or five days. Has itching of head and back of neck. He appears to be rather agitated, and occasionally when spoken to half raises himself up, and then falls suddenly down again in an unnatural manner.—27th. Did not sleep well last night. Tongue is sore again at tip. After breakfast a sense of heat and trembling came on in the abdomen. Strychniæ gr. $\frac{1}{10}$ + quin. disulph. gr. iij. + acidi nitrici ♏ij. + aq. ℥j. ter die sum.; ol. morrh. 3j. bis die.—30th. Is better; his hands and feet are comfortable, not numb, but his head aches.—Dec. 5th. Is much improved; getting on first-rate; wishes to be extern patient; feels quite a different man to what he was. He is, however, getting more deaf. Has no unpleasant dreams now. Memory improved. Urine clear, of amber colour, sp. gr. 1018; paler than it was at first.—12th. Is stronger than he was a week ago. His legs pained him very much when he went out, but they have got stronger since. Appetite good. Sleeps well. P. c. mist. c. ferri et quin. citrat. gr. viij. ad ℥j.—22d. Is quite a different man; in better spirits than he has been a long time.—1867, Jan. 9th. Improving, but has not slept so well of late without the morphia. P. c. mist. and pil.—30th. Is very well and hearty; sleeps tolerably well; is returning home.

The subject of the above-described disorder was a brave stalwart seaman, who had exposed himself to no ordinary perils and hardships in the service of humanity, and in doing so had overstrained his nervous system. We have no hesitation in counting his disorder as physical. But if a woman of weaker frame overstrains her nervous power in any of the various toils and struggles which are the lot of her sex, and falls into like disorder, how ready we are to conceive, if not to utter, the suspicion—"that there is a great deal of hysteria in it," implying thereby, if we mean anything definite, that there is a great deal of imaginary as well as of real disorder. In this I think we are very apt to be wrong, and I believe it would be wiser to forbear the use of the term 'hysterical,' except in instances where we have sufficient proof that whatever be the condition of the body, the mental character is defective; in short, where we have evidence of duplicity and selfishness. This case, as well as that of M. A. B., no. i., show very well how persistent derangement of the cerebral nutrition may be induced by mental influence, and if by this, then I presume by other imponderable agencies also. We can readily comprehend the causation of delirium by some toxic agent, which circulates in the blood, as alcohol or belladonna,

but it is not so easy to conceive the production of this phenomenon apart from these or the like influences. Properly speaking, there is, of course, a cause for every effect, but in the cases I am adverting to, the peculiarity seems to be that the cause having once acted, the "branle" or shake having been once imparted to the vital actions of the part, the effect does not cease, but continues indefinitely. When a toxic agent has been eliminated, and a little time has been allowed for recovery, a well-constituted nervous centre reverts to its normal mode of working, and all disorder is at an end. But where the *vital power* of the tissue (*pace* the iatro-chemists) has been materially weakened by a severe shock or a prolonged strain, recovery does not take place when the cause ceases to operate, nor, as in the present instance, does it tend to ensue at all unless some other agency of an opposite kind be brought into play, which may recreate the impaired power. To have clear views on this point seems to me all-important in dealing with most cases of nerve-disorder not dependent on structural lesion. To this head of deranged vital actions, either spontaneously (apparently) occurring, or as the result of some shock or evident disturbing cause, we must refer, I think, the great majority of cases of epilepsy, of chorea, of neuralgia, of insanity, of delirium, of collapse, and of true delirium tremens (not delir. ebriosorum). The nature of the nervous disorders in this case is very suggestive, I think, as to the quality of the pathological process from which they resulted. The essential features of the former were excitability and weakness, and it seems difficult to connect these with any other mode of nutrition than one which is characterised by haste and imperfection. What a catarrhal diarrhœa is to a healthy condition of intestinal action, the same we may conceive the cerebral disorder of T. H. to have been in comparison to the normal working of his brain. The diffuse character of the disease is worth remarking; sensory, intellectual, and motor functions were all involved, and that pretty extensively. The sympathetic and vasomotor departments were not exempt, as evidenced by the matutinal vomiting and purging, and the nocturnal sweating. The tonic treatment was unmistakably beneficial; but I am by no means prepared to say that it would have been appropriate in the

earlier periods of the malady, or that it would be borne as well in another instance of as long duration. The quality of the morbid action may be such, especially in recent cases, as to call for depressants and not tonics, or where hyperæsthesia is great, tonics may not be tolerated, although depressants would be even more injurious. Here again we are obliged to recognise the manifold shades and varieties of morbid nervous action; and how can we ever hope by any scrutiny of the dead organ to ascertain on what modification they have depended? The really important points in any given instance for the physician to ascertain are, whether the symptoms depend on any structural lesion, such as inflammation, new growths, or remote irritation; from what causal conditions they have arisen; and what is the quality of the morbid action. These must rule his therapy.

CASE VII.—M. G., æt. 25. Admitted Dec. 27, 1865. She had at first symptoms of gastric and bronchial catarrh, with pyrexia; these merged into a condition of typhoid character, but without any characteristic eruption. Within a week after her admission she became very delirious and noisy at night, so much so that she had to be removed to a separate room. Subsequently she became noisy also in the daytime, not constantly, but very much so at times, while at others she was conscious and rational. Deafness supervened and increased considerably; bed-sores formed and healed as the fever appeared to pass away and convalescence to approach. Early in March she had become very emaciated, and of a sallow earthy aspect; she was quite deaf, at least she often appeared so, and her intellect was evidently much impaired; she refused food at times, and had the smell of an insane person. About the middle and again later in the month there were short gleams of improvement; but towards the end she became again very delirious and noisy at night, more drowsy by day, and so continued until her death, April 3d, from utter exhaustion and asthenia. Her weight on March 16th was only 66 lbs. On 26th she had a well-marked attack of convulsions about noon. The deafness was observed to be less in the early morning, and to increase after 10 A.M. At the autopsy the brain was found very pale, rather wet, otherwise quite healthy; it weighed 43 oz. The lungs were far advanced in tuberculosis. Peyer's patches were not at all enlarged; there were several small ulcerations not quite cicatrised in the large intestine, and one similar one in the small, close to the ilio-cæcal valve. The kidneys were sound. It is far from easy to decide whether this case was primarily one of fever (typhoid), or of tuberculosis. I incline myself to the former view, chiefly because her malady ran a course which corresponds more with that of a specific fever, ending in imperfect convalescence and consecu-

tive collapse of vital power, than that of a continuously progressive disease. Moreover, the early and severe delirium, coinciding as it did with a high temperature (104° on one occasion in the early afternoon), and not depending on any meningitis, is well nigh conclusive. The affection of Peyer's patches, if indeed it be essential to typhoid, may have subsided.

CASE VIII.—Mr. H., æt. 30, seen Aug. 16. Has long been intemperate, but not to any great excess. For twelve months has been queer-tempered and fidgety about his affairs. Had an attack of melancholic character about three months ago; shut himself up in a room for some time. Is a healthy-looking man, but is said to have got thinner lately. Has been ill some days; has had no sleep since the 13th; on 14th was driving his wife in a gig and had a fit; the same evening he had a second; never had any before. At present he is very delirious and excited, has delusions, sees flies, &c. on the wall; is anxious about his pictures. As he lies in bed he is constantly fidgeting, twisting up the bedclothes, and sometimes trying to get out of bed, but he does not appear to be violent. His manner and gestures indicate a state of tension of the nervous system. Bowels open; tongue clean; no appetite; not thirsty; pulse quick and weakish. Had three grains of opium last night, but did not sleep. Pupils of medium size. He was ordered ant. pot. tart. gr. ¼ + liq. opii sedat. ℥iij. + m. c. ℥ß, 2dis horis, with brandy and milk and beef-tea alternate hours. This was at 3 P.M. In the evening he became very violent, struggling with those who held him, rushed at the windows, so that it was necessary to confine him. He then became quiet and slept awhile; soon after awoke again, to sink and die about 5 A.M. He does not seem to have been conscious before death.

The immediate cause of the fatal event in this instance was no doubt failure of the circulation, whether that resulted from defective innervation, or, as I have found on dissection in another case, from the coagulation of fibrine in the cavities of the heart. Under the head of defective innervation we may include as a possibility inhibitory arrest of the heart's action by irritation of the vagi at their origin in the medulla, as well as failure of power in the spinal centres, with which the sympathetic cardiac nerves are connected. My object, however, in citing these two last cases is to illustrate the concurrence, which, though not unknown, has not been sufficiently considered, of delirium and convulsions under the same causative conditions. I do not refer to meningitis where the convulsions may depend on a different state of the cerebral tissue to that which subsists during the previous delirium as affirmed by Dr. Radcliffe, but to conditions where there is no reason

to believe that the morbid process has undergone any essential alteration during the manifestation of either symptom. Thus case vii. affords us an instance where the whole encephalon was undoubtedly ill nourished and enfeebled, and had been so for a long time. The delirium was the expression of this imperfect nutrition, as it affected the larger part of the compound organ, the cerebral hemispheres. The interlude of convulsion was undoubtedly due to the same cause, only that, owing to some inappreciable circumstance, the excitable districts were more affected at that time than they had been previously, or were subsequently when the delirium returned. It appears to be a general fact that the functional disorders of nervous tissue are prone to change their locality more than those of other tissues. In the second instance the quality of the morbid action was certainly different, much more intense and active, but there is no reason to think that there was any material difference in it at the time that the convulsions occurred, and at the time (only twenty-four hours later) when delirium set in. In another case of delirium tremens which occurred in my experience, an attack of convulsions has twice occurred during the existence of the delirium, and this is, I am aware, no uncommon occurrence. In my work on *Functional Nervous Disorders*, p. 163, a case is related of furious sthenic delirium, during which an attack of convulsions occurred. The point on which I wish to lay stress is this, that though we have no exact knowledge as to what is the peculiar state of the cerebral tissue which conditionates delirium and convulsions, we are assured that it is at least in most cases a very similar if not an identical one. The essential features of delirium are hyperæsthesia and hyperkinesia, or, in plainer language, undue excitability and mobility. The very same may be said of convulsions generally; and we may conclude that the difference in the phenomena depends much more on the locality affected and on the special endowments of the tissue than on any alteration in the pathological process itself.

I have just said that we have no exact knowledge of that pathological state which determines delirium; but though we cannot say in what respect of shape, or molecular constitution, or chemical composition, the nerve and nerve-cell of the delirious patient differ from those of the healthy, I

by no means think that we are destitute of real and available information regarding its nature. Delirium may be taken as a type of *irritation* affecting a certain tissue and locality. This latter term, though sometimes objected to as a vague one, cannot be dispensed with by the clinicien, and conveys, I venture to think, to the experienced mind information of a tolerably definite kind. The following may be enumerated as the principal features of irritation. The part affected is *unduly impressionable*, is less tolerant of its natural stimuli than in the state of health. Its *functional energy is lowered*, it is less capable of doing its appointed work, but is much more readily set in action. At the same time *its nutritive actions are deranged*, its secretions (if it be a secreting organ) are often increased, or morbidly changed, while its vessels, participating in the general enfeeblement, no longer duly *regulate the blood-supply*, or restrain their contents from *exuding in excessive quantity*. In fact, it is a condition which ranks pathologically between pure hyperæsthesia or hyperkinesia on the one hand, and developed inflammation on the other, and approximates in different instances more or less to either; much depending, of course, on the tissue most affected, and on the construction of the part. Its motors may be any abnormal matter whatever in the blood, or even an undue supply of blood from relaxation of the arteries. It may be determined also by imponderable influences, as mental, electrical variations, influenzal miasm. Our clinical experience proves to us that it is not a constant condition, even where its principal phenomena are apparently identical. Thus, taking a very simple and typical instance of irritation, the so-termed strumous ophthalmia, where the hyperæsthesia (photophobia) is most intense, we find that the same remedies are by no means always appropriate. Quinine, iron, and cod-oil are successful in many instances; but in others small doses of tartar emetic are of much more avail, as stated by Mr. Chesshire. This is very much what we find to occur in disorders of the hemispheres and other nervous centres, and while it proves, I think, the varying *quality* of morbid states of nervous tissue, it also shows the general similarity of the derangements which occur both in the peripheral and central organs. The same view is supported by an inter-

esting case mentioned to me by Dr. Greenhow, where a young man, convalescent from severe typhoid, had hyperæsthesia of the legs, which ceased when maniacal delirium set in, but returned with great intensity when the latter subsided. Here the delirium, the disorder of the primary nervous centre, was evidently the equivalent of the hyperæsthesia, the disorder of the nerve or its tertiary centre in the cord.

C. HANDFIELD JONES, M.B. Cantab. F.R.S.

# IX. ON LOOSE CARTILAGES IN THE KNEE-JOINT.

LOOSE bodies in joints appear to be of two kinds: one the result of inflammation, the other of accident. Those with which the surgeon has for the most part to deal are of the latter description, namely, the result of accident. It is of these that I propose at present to write. Of the former class Rokitansky says, "they are either masses of exudation set free from the inner surface of the synovial membrane, or growths which have originated beneath it, or, lastly, formations (precipitates) from a synovial fluid of unnatural composition. In the last case they are distinguished by their laminated structure." These bodies are more frequently found in the knee than in any other joint; but they are also met with in the elbow, wrist, and temporo-maxillary articulations. They are very rarely found in orbicular joints. Professor Pirrie has found fifteen of these bodies in one knee-joint. But, he says, "the largest number I have ever read of being found in one joint was sixty; and the largest number removed from a joint was thirty-eight. Berry, of Kentucky, removed thirty-eight, without any untoward occurrence, from the left knee of a coloured man thirty-five years of age, who in early life met with an injury which was rapidly followed by swelling, and this continued until the date of the operation."* These bodies are sometimes found united to the synovial fringes by a narrow pedicle, and sometimes they are separated and loose in the joint.

But I proceed to consider the second class of loose bodies within joints, namely, those which are the result of accident. Of these I have had a large experience, having operated in thirty-six cases, and having seen many others where the loose body could not be fixed so as to be removed. I believe

* *The Principles and Practice of Surgery*, p. 451, 2d edition.

in every case violence has at a short interval preceded the discovery of the loose body within the joint: violence such as a blow on the knee, perhaps in the hunting-field, or with a cricket-ball; or through a fall, or else, perhaps, through such violence as results from a sudden twist of the limb: some such accident seems to occasion the detachment of a portion of cartilage, or to detach a portion of a semilunar cartilage. The detachment of a portion of a semilunar cartilage I have reason to believe is a much more common occurrence than is generally supposed. It is an accident which, so far as I know, is not alluded to by authors. Sir William Fergusson mentions instances in which the semilunar cartilage became displaced, and he says, "within the last few years I have seen several examples of so marked a kind, that I could not doubt that some such displacement had occurred."* Sir Astley Cooper and Mr. Hey also described instances of this form of accident; but there is no mention in surgical writings of the detachment of a portion of a semilunar cartilage which, escaping from the joint, appeared as a loose cartilage. I will therefore relate the following case:

A clergyman, æt. twenty-five, whilst playing football, early in November 1866, struck the ball on to a hill-side, and again hastily kicking, he missed the ball. By the force of the blow he was swung round and fell to the ground. He immediately arose, and attempted again to kick the ball, but could not. He was forthwith unable to walk. Considerable pain supervened in the joint, with swelling, so that when surgical aid was obtained the displacement which had occurred at the time of the accident could not be distinguished. After six weeks the swelling had entirely subsided, but he could not walk; the pressure of the foot on the ground caused considerable pain, and progression was at this time impossible except with the aid of two sticks. In this manner he walked into my house when I first saw him, six weeks after the accident.

On examination, the left knee presented a loose cartilage lying on its inner side, somewhat obliquely, immediately in front of the internal lateral ligament. There was neither effusion into the joint nor thickening of the synovial mem-

* *A System of Practical Surgery*, p. 361, 4th edition.

brane. The pain caused by the presence of the loose body rendered active treatment necessary; and the case being admirably adapted to the removal of the cartilage, the operation was explained, and at once assented to: it was performed on the same afternoon.

An incision was made about three-fourths of an inch below the cartilage with a small tenotome, local anæsthesia being employed. The knife was carried up freely to the cartilage, and a sufficiently wide passage was made for the body easily to move along; but it could not be moved. It was readily seized, but it was evidently adherent, and could not be brought away subcutaneously. I therefore cut down upon the body directly, and found it somewhat different to what I expected to find, and detained *in situ* by a small band of ligament. This band was touched with the point of the knife, and the cartilage forthwith came away. There was no escape of synovia from the joint. The limb was carefully bandaged. Little or no pain followed the operation. The bandage was not removed for seven days. At the expiration of this time it was removed, and the wound was perfectly healed. In fourteen days after the operation my patient walked firmly, without lameness and without a stick, and was ready to skate or for any other exercise; but he abjured football.

The body which was removed was three-fourths of an inch in length, soft, smooth, and pliable, and there were attached to it some ligamentous fibres. It was the anterior portion of the internal semilunar cartilage, and it retained in every respect its normal appearance. The specimen is preserved in the Museum of the Hospital.

This case differs from others where I have been called upon to operate, in this, that whereas many years are for the most part allowed to elapse before the loose cartilage is excised, here six weeks only had passed since the occurrence of the accident. The largest, the roughest, and the most painful cartilage that I have ever known remained in the knee-joint twenty-five years after the accident which occasioned it. Happily it only occasionally became displaced; but when this happened, the pain was so acute that the patient dropped as though he were shot. But in the case

above related, only six weeks had elapsed from the time of the accident, and the cartilage was neither changed in structure nor in form. It is known that, as in the instance related by Mr. Teale,* a portion of articular cartilage may become detached through violence applied to the joint; but this is believed to be a rare form of accident. It was the result of a severe contusion—a cask of beer falling against the knee. Loose cartilages in joints are frequently met with, and they are generally seen in robust young men who are in the habit of taking more or less severe exercise: they result from a shock, or a fall or a blow of some kind, but it is usually not an accident occurring with such violence as to cause fracture. Thus, Mr. Square says, of nine cases which he relates; "it is curious, perhaps instructive to note, that all these cases of loose cartilage in the knee-joint occurred in healthy countrymen, and in every instance but one in those engaged in farm operations. All were young men, or at any rate young when the disease was detected. I would state my conviction," continues Mr. Square, "that a very large proportion of these loose bodies are the result of local injury. How many patients refer to some particular injury as the antecedent and cause of the disease."†

These bodies are usually seen to consist of two distinct substances, one part being semi-transparent, like fibro-cartilage, with perhaps another small portion hard and opaque, like bone. Under the microscope the former resembles perfectly the fibro-cartilages in structure.

In conclusion, I would express my belief that, considering the subjects in whom loose cartilages are for the most part found, the nature of the accidents which usually occasion them, and their structure, could we inspect the interiors of knee-joints in cases as recent as that which I now record, or even as recent as that related by Mr. Teale, we should find in a very large number of instances that the loose cartilage was a portion of a semilunar cartilage which had become detached and which floated through the joint.

BERNARD BRODHURST.

* *Med.-Chir. Trans.* vol. xxxix. † *Lond. Med. Review*, 1861.

# X. INFECTING AND NON-INFECTING CHANCRES.

*Remarks on some Cases of Infecting and Non-infecting Chancres, with special reference to the Means of Diagnosis between the two Forms of the Disease.*

THERE is, perhaps, no subject in medical science which has given rise to more discussion, and about which there is more doubt, than the possibility of at all times recognising clearly in their earlier stages the two forms of primary syphilitic sores, viz. that which is followed by constitutional symptoms, and that which is only a local disease. The utmost importance of doing so is apparent to all, but not so the means for attaining this end. Far be it from me to pretend, in this short paper, to lay down any positive rule for doing so, as I should fail signally; and such is not my object. I propose to give only a short summary of some well-marked cases, which will tend rather to show the difficulties which at times attend the arrival at a correct diagnosis; and to follow these by a few conclusions I have drawn from the observation of a considerable number of cases which have occurred in the wards of my regimental hospital.

One of the great difficulties which attends investigations on this subject in civil practice is the inability of the surgeon to watch his patient for any great length of time. In civil hospitals, as soon as the patient is able to carry out his or her vocation, they leave, and return to their respective callings, and in the greater number of instances are never seen again; and therefore all statistics on this subject from such sources must to a certain extent be incomplete, for the reason that in this disease time is everything.

A patient may present himself with a small sore having all the appearance of a non-infecting chancre, which heals rapidly, and the surgeon sees no more of him; but this is

soon followed by secondaries, and he may go elsewhere to be treated. The first surgeon believes he has correctly diagnosed the disease as non-infecting; but the second has good reasons for taking an entirely different view of the case. I shall presently show that this statement is not merely theoretical, as it occurred to myself not very long since. The notes of the case will be given further on.

This evil is in a great measure obviated in military practice; as, although the patient may have returned to his duty, the surgeon is able to watch him for any length of time, and so verify his diagnosis.

During a period of rather more than four years, I find there have been admitted into the regimental hospital of the 1st Life Guards forty-nine cases of venereal disease. Of these, nineteen were diagnosed and treated as infecting chancres, as they presented well-marked characters of the disease. The remaining thirty were placed under the heading 'non-infecting,' and treated accordingly. I have inspected lately nearly all these latter cases, and, with the exception of those about to be cited, not one had a trace of secondary symptoms of any kind.

From this it would seem to be an easy matter at all times to diagnose the two forms of the disease; but the cases I now propose to report will prove it to be otherwise.

CASE I.—Trooper E. F., æt. 22, was admitted into hospital March 9, 1866, with a suppurating chancre situated at the junction of the frænum with the glans penis. He did not come under my own observation until April 2d, being under the care of the surgeon of the regiment, who had no doubt of the nature of the sore. At this time the primary sore had quite healed, but there was a bubo in the right groin which threatened to suppurate. As the fluid in the bubo was very thin, I ordered pressure only, and it was absorbed, and the patient left the hospital on April 10th, to all appearance quite well. On the morning of the 26th of April he again presented himself at hospital, complaining of a fresh sore on the penis. I questioned him closely about his having been exposed to the danger of infection since his discharge from hospital, which he most emphatically denied.

On examination I found a sore about the size of a threepenny-piece situated at the upper and back part of the glans, and somewhat posterior to it and at the junction of the prepuce with the penis was a large circumscribed induration. Mr. Henry Lee saw the case with me on the 3d of May, at which time there was great induration remaining, and a papular eruption was showing itself on the chest. At

Mr. Lee's suggestion I endeavoured to inoculate this patient with the discharge (which was very scanty) from the sore, but without any results, although I repeated the experiment carefully several times. Mercury was administered in the form of blue-pill, and he left the hospital apparently well.

In June 1866 he returned again with a very severe attack of syphilitic iritis, for which he was again treated with mercury; and he has been twice in hospital since with marked symptoms of cerebral irritation, which were relieved by the administration of small doses of the biniodide of mercury and tonics, and he has been doing his regular duty since.

CASE II.—Trooper G. C., æt. 21, was admitted into hospital in May 1866, with a small suppurating chancre situated near the frænum of the prepuce, and accompanied with an inflamed gland in the left groin. Water-dressing was applied to the sore and a poultice to the gland, and the syrup of the iodide of iron was administered. The sore healed rapidly, but extensive suppuration took place in and around the gland in the groin, sinuses formed, and free incisions were obliged to be made.

Some days after the healing of the primary sore I found that he was concealing another, which had formed on the frænum and was in a sloughing condition. Opium, quinine, and iron, and a liberal diet with porter were ordered; and he ultimately did well, and was discharged to duty in fair health, having gained flesh considerably. In a short time he again presented himself at hospital, complaining of pain about the left testicle, which was slightly enlarged, especially at its lower extremity, and somewhat painful when handled. This I looked upon as scrofulous in its nature, and again admitted him, ordering him cod-liver oil and the muriated tincture of iron. Subsequently a large deposit took place in the lower part of the testis, and there were evidences of tubercular deposits in the apices of both lungs. A fortnight after admission he complained of pain about the seat of the old sore on the penis, on examining which I found an unhealthy-looking sore surrounded by a mass of induration, which was to a great extent circumscribed, but perhaps not quite so much so as is usually found in a true indurated syphilitic chancre. Two days after, ulceration commenced in the cicatrix of the old bubo, and spread rapidly. Cod-liver oil and iron were again administered, and for a time he improved, but subsequently scrofulous disease of the knee-joint commenced, and he was discharged from the service.

CASE III.—Trooper J. C., æt. 24, was admitted into hospital on October 20th, 1866, complaining of a small suppurating chancre situated on the prepuce, accompanied with an inflamed gland in the right groin. The sore had existed for some days prior to admission, but it healed rapidly and the bubo subsided, and he was discharged to duty in ten days from the date of his admission.

On the 12th of December he was admitted into hospital with

syphilitic ulceration of the throat and lepra on the chest, for which he was treated and apparently cured. On examining the glands in the groin I now found amygdaloid enlargement. On the 8th of June 1867 he was admitted into hospital with most acute syphilitic iritis, not having had any fresh attack of venereal disease.

CASE IV.—Trooper H. C., æt. 21, was admitted into hospital on the 11th of April 1867, with a chancre situated on the under surface of the prepuce, somewhat to the left of the median line, which he stated he first noticed two days prior to admission, having been exposed to the risk of contagion on the 29th of March.

The sore was circular, somewhat cupped, and indurated at the base; the induration was perfectly circumscribed. He complained also of an inflamed gland in the groin, which was somewhat enlarged. Water-dressing was applied to the sore, and the tincture of iodine to the bubo. There was no amygdaloid enlargement of the gland in the groin. The sore had all the appearance of an infecting chancre, but as the gland in the groin threatened to suppurate, and there was an absence of the usual form of enlargement of the glands in the groin, I determined to treat him with the syrup of the iodide of iron only. The induration at first increased, but the sore healed and the induration became absorbed, and he left the hospital apparently cured on May 9th, 1867.

June 21st.—I examined this man carefully to-day, and could not find a trace of secondary symptoms about him, and there was no remaining induration.

I believe that most surgeons in the present day will acknowledge that there are two distinct forms of the disease commonly known as syphilis; but Dr. Wilks' remark (in his "Lectures on Syphilis," delivered at Guy's Hospital in January last, and published in the *Lancet*) seems to me to be most true, viz. "that the term 'syphilis' is only applicable to the constitutional affection, whilst venereal disease is a wide expression, and may be used for all sexual sores." But then arises the question, Does the non-infecting form of chancre depend upon a specific virus? I believe it does, though I am unable to prove the fact.

The first case which I have cited would seem to prove clearly that there are two forms of the disease. The first chancre was undoubtedly non-infecting, and the man was discharged from the hospital; but he returned in a short time with a large indurated chancre, which was followed by the most acute secondary symptoms, although he had not been exposed to the danger of contagion while out of the hospital.

In this case, doubtless, the two forms of the disease existed at the same time. One was purely local, the other constitutional.

The statistics which I have given in the earlier part of this report would seem to prove beyond a doubt that there is a non-infecting form of chancre. The course of treatment adopted in nearly all the thirty cases of suppurating chancre was simply a course of the iodide of iron with some local application; and yet none of those I have examined since (there being three or four who had left the regiment, and were consequently not inspected) showed the slightest signs of constitutional symptoms. I have thought it worth while to report case ii., as it is an extremely rare form of the disease. The patient was primarily admitted on account of a suppurating chancre, which ultimately did well: but he was subsequently attacked with strumous disease of the testicle, and also gave signs of tubercular affection of the lungs, for which he was treated. While in hospital the cicatrix on the penis reopened, and on examining this I found what had the appearance of an indurated chancre. Supposing this to have been the first time I had seen this patient, I should most undoubtedly have looked upon it in this light, and have treated it with mercury, much to the detriment of my patient. There is no doubt but that this induration depended upon strumous thickening, as it was all absorbed under the influence of iron and cod-liver oil. Mr. Henry Lee informs me that he has seen one or two similar cases which had actually been treated with mercury.

The third case is one of peculiar interest, as it shows that constitutional symptoms may follow a sore which does not present the usual symptoms of an infecting chancre. Induration around the sore, and implication of the neighbouring glands, are the usual concomitants of the true syphilitic sore; but there are exceptional cases which are not accompanied with these signs, and so it was with this patient. The man was only ten days in hospital, the sore discharged pus, and so clear a case did it seem to me that I did not even think it necessary to examine the glands in the groin to see if they were enlarged. Yet this patient, without any fresh attack of the disease, soon presents himself at hospital with constitutional symptoms, which have lately proved to be severe.

In Dr. Wilks' lectures (before mentioned) it is stated that "Dr. Fraser, who had had a large experience of syphilitic disease in India, had seen sores heal at once, or perhaps there was a mere scratch which healed immediately, but was followed by the usual secondaries. In cases which followed supposed gonorrhœa, he believed that there was a crack or sore which had been healed. It was for this reason that he relied more on the induration of the glands as a diagnostic mark than on the character of the chancre."

I believe, if I had examined this case more carefully, I might have diagnosed it to be an infecting sore; because, when the patient presented himself at hospital with the secondary symptoms, I found enlargement of the glands in the groin. This case shows forcibly how necessary it is to watch the case for a long period of time.

The notes of case iv. seem to complete the list of difficulties sometimes attending the diagnosis of an infecting chancre. The sore in this instance had the most characteristic appearances. The induration at the base was very circumscribed, and felt like a pea, situated in the soft structures; and at one time I was almost convinced that it was of the infecting variety. But on examining the groin, I could find no amygdaloid enlargement of the glands; and I therefore determined to give my patient the benefit of the doubt, and simply administered the iodide of iron. A few days since, I carefully examined this patient, and have no cause to regret the course of treatment I adopted, as all the induration has vanished, and he has no secondaries.

*Conclusion.*—It appears from the above cases and remarks that there are two forms of the disease known as syphilis, and the question naturally arises, Is there any symptom by which we can in all cases recognise the presence of an infecting chancre? Induration, we have seen, may exist without the sore being infecting; but the result of my own observation seems to prove that the infecting form is always attended with the amygdaloid enlargement of the glands in the groin. I do not remember ever having seen a case in which it did not exist, though I am far from saying that it never does do so, as the extent of my observations does not at present justify such an assertion.

EDGCOMBE VENNING.

# XI. ON NASO-PHARYNGEAL POLYPI.

THE class of cases which form the subject of the following remarks is one which must be of the deepest interest and importance to the surgeon; not only on account of the very formidable operations necessary for the removal of the disease, but also because of its serious and dangerous nature. For, as M. Nélaton remarks, "individuals never live long with a growth of this kind." There is always the prospect, and, more than this, the probability, of a speedy death, either from hæmorrhage or from the impediment which the tumour affords to respiration and deglutition.

It is hoped, therefore, that a narration of those cases which have come under observation in this hospital of late years, with some few remarks on the operative procedures which they demand, and a brief sketch of the opinions and practice of modern surgeons in this affection, may not be uninteresting.

In order that a condensed, and, at the same time, it is trusted, a comprehensive examination of the characters and nature of these tumours may be given, it has been deemed advisable to pass briefly in review their anatomy, diagnosis, and treatment, in order to embody the various cases which have fallen under the writer's own observation in this hospital, as well as those he has found recorded, only alluding to them as they serve to illustrate this or that point, or bear on the portion of the subject more immediately under consideration. By this means the more salient points in connection with each case will be touched upon, without a dry detail and useless repetition of facts.

The base of the skull is much less richly supplied with blood than the vault, and accordingly we find that it is much less frequently the seat of disease. When disease does attack this part, it is for the most part located in one spot,

with the exception, of course, of ulceration or other affection originating in the tympanum. And this part is that portion of bone formed by the basilar proces of the occiput and the body of the sphenoid; the portion, in fact, which enters into the formation of the pharynx, and which, being covered over by a highly vascular mucous membrane, receives, in consequence, an increased amount of blood. The periosteum, too, in this situation, is peculiarly thick and abundant, and contributes in affording to the bone a large degree of vascularity; and thus we find, in accordance with the universal rule, that disease is more common in this situation than in any other at the base of the skull. Thus, when ulceration affects the base of the skull, it is generally found to be situated in the body of the sphenoid. Tumours, too, of various kinds, are found more frequently in this situation than in any other. For instance, malignant tumours occasionally grow from this part, as well as some forms of innocent tumour. An example of a smooth oval exostosis growing from the pharyngeal spine is preserved in the Museum of Guy's Hospital; while a remarkable instance of enchondroma, which projected into the cranium, the orbits, the antra, the nasal, zygomatic, and pterygo-maxillary fossæ, is contained in the Museum of St. George's Hospital. But by far the most common forms of tumour growing from this part are undoubtedly those which are *fibrous* in nature, and to which the term 'naso-pharyngeal polypi' has been given.

These tumours, which have received their name from their accidental resemblance to the ordinary fibrous polypus of the nose, appear to grow, for the most part, from that portion of the base of the skull which has been designated above. They consist of continuous outgrowths from the thick periosteum in this neighbourhood, belonging to the category of fibrous tumours to which the term *corps fibreux implantés* has been applied by M. Cruveilhier,* in contradistinction to those other spherical or oval isolated tumours of fibrous tissue which are oftentimes found imbedded in organs, but which are totally separate growths from the tissue in which they originate, and to which the term *corps fibreux non implantés* has been applied by the same author. Of these latter forms

* *Anatomie Pathologique.*

of growths the fibrous tumour of the uterus presents a characteristic example.

It has been said that for the most part these tumours grow from the base of the skull; but that such is not invariably the case is proved by a dissection by M. Robert,* in which the tumour appeared to be connected with the fibrous tissue in front of the bodies of the cervical vertebræ, and to have projected into the nasal fossæ through the posterior wall of the pharynx.

Concerning the early history of these cases comparatively little is known; for, as far as I am aware, no dissection has ever been made which demonstrated one of these tumours in its primary state, and it is not until they have attained some size and encroached somewhat on the cavities of the face that the patient's attention is drawn to the disease. They then appear to grow with much more rapidity than the ordinary fibrous tumour, and to possess great vascularity; in this respect resembling fibrous polypus of the uterus, so that, indeed, repeated and violent epistaxis is often the first indication of the disease, and occasions the examination which first leads to a discovery of the tumour.

It has been said that these tumours grow rapidly, and they speedily encroach on the various cavities of the face, sending spurs or prolongations in every direction, producing absorption or bulging of the bone and very considerable deformity. They first appear, for the most part, in the nostril, and then, growing rapidly, they push out the nasal bones and produce a very characteristic flattening and enlargement of the nose. This enlargement was particularly well exemplified in a case which was, and in fact now is, under the care of Mr. Prescott Hewett. The case was that of a boy, aged only twelve, who had suffered from fibrous tumour of the pharynx for six years. In this case it was perfectly possible, after the tumour had been pulled out, to pass the finger right through the nostril to the posterior nares. The growth often extends from the nostril by sending a spur into the antrum, producing great bulging of the cheek and the floor of the orbit. Again, it may project into the pharynx, pushing down the soft palate and materially interfering with respi-

* *Conférences de Clinique Chirurgicale*, 1859.

ration and deglutition. In this situation, upon opening the mouth, it may be both seen and felt, and presents a very essential point in the diagnosis of these tumours from ordinary nasal polypi.

Such, then, are the most frequent situations in which these tumours are found; but they are not the only ones. Thus they have been occasionally found in the orbit, having passed through the spheno-maxillary fissure,* or even by perforating the inner wall of the orbit. Such was the case some years ago in a patient of Mr. Henry C. Johnson in St. George's Hospital, where the tumour might be traced by a pedicle through a hole in the inner wall of the orbit from the nose into that cavity. And, again, they may be found in the zygomatic fossa, or even, winding round the zygoma, they may project on the side of the face, having passed out of the pharynx through the pterygo-maxillary fissure. Lastly, they may be found on the face, in front of the superior maxilla, as was exemplified in the very remarkable case recorded by Mr. Hewett.†

In this case the tumour, growing from the base of the skull, had pushed its way through the pterygo-maxillary fissure, and, winding round the zygomatic surface of the superior maxilla, had appeared on the cheek. To use Mr. Hewett's own words, "It (the growth) had reached the pterygo-maxillary fossa, either by destroying a portion of the palate bone, or by originally passing through the spheno-palatine foramen. Once in the fossa, its subsequent progress may easily be traced. It passed into the orbit through the spheno-maxillary fissure, and in the face it had in some parts made the bones yield, and in others it had so completely moulded itself to their shape, creeping over their cutaneous surfaces, that the outlines of the bone were scarcely discernible."

Thus it may be seen that these tumours may extend in almost any direction among the various cavities of the face; and wherever they extend, there they cause a very remarkable and, to a certain extent, characteristic deformity.

In a patient suffering from this disease the nose may be

* *Med.-Chir. Trans.* vol. xxxiv. p. 47. † Ibid. p. 43.

noticed to present an appearance of flattening from expansion of the nasal bones on either side, and the bridge is entirely lost. The eyes appear to be sunken, as a rule, or, it may be, they are unusually prominent and pushed forward. There may be bulging of one or other cheek, or there may be firm, uniform swellings in various situations. On opening the mouth the hard palate may be found to have lost its usual concave appearance, and the soft palate may be seen pushed down; and even sometimes the tumour may be seen presenting behind it. On looking into the nostril, it is seen to be distended by a soft, reddish mass. No air usually passes along that side of the nose; the voice often is markedly nasal, and respiration is oftentimes difficult, and the patient obliged to sleep in the semi-prone position.

The diagnosis of these growths is by no means easy, even when they take their usual course; but, as in Mr. Hewett's case, referred to above, where the tumour takes a circuitous course, the diagnosis becomes next to impossible. The chief points to observe in coming to a correct decision with regard to such a tumour are—first, to determine its nature, whether or not it may be malignant; and, secondly, to ascertain its attachment, whether it be an ordinary fibrous polypus of the nose, or a growth arising external to that cavity, and projecting into it.

The history of the case is, of course, one essential point in ascertaining the malignancy or otherwise of the tumour, especially as regards the rapidity of the growth. But though this is a circumstance of considerable importance, it is necessary to bear in mind that one may be led into error by laying too much stress upon it. This was evidenced in a case which occurred a short time ago in St. George's Hospital, where the tumour had only been discovered three months. It ought to be mentioned, however, that epistaxis had existed for eighteen months. This case, therefore, also proves how valuable a symptom bleeding from the nose is as an early premonitory sign. The hereditary history of the patient may also be of value in confirming our diagnosis. The examination of a portion of the tumour under the microscope, if such portion can be extracted, is also useful in assisting us in coming to a correct determination. By this means the true nature of a

case which occurred in this hospital was revealed, and its malignant nature proved. Another essential point in which naso-pharyngeal polypi differ from cancerous tumours, when growing in the same situation, is in the fact that whereas the former grow from the periosteum covering the bone, the latter grow from the interior of the bone itself, and then, rapidly perforating the thin septum which separates it from the cranial cavity, produce symptoms of brain-mischief. M. Nélaton attaches special importance to the age of the patient as a means of diagnosis between cancer and fibrous polypus, the latter being essentially a disease of youth. This, however, is by no means invariable, since cases of fibrous polypus do occur in old men, though not so frequently as in patients below the middle period of life.

The second point in the diagnosis of those tumours is one of considerable difficulty; namely, to ascertain whether they grow within or external to the nasal cavity; whether, in fact, they are simply nasal polypi or naso-pharyngeal polypi; and I am not aware that there is any diagnostic mark by which we can determine whether the polypus is or is not attached to the base of the skull. The difference in the two names suggests one mode by which an idea of the truth may be arrived at, whether or not the tumour projects into the pharynx. But then it must be confessed that it is no uncommon thing for nasal polypi to grow backwards. By means, however, of a careful digital examination, by hooking the finger round the soft palate, the direction which the tumour takes can generally pretty accurately be made out.

The diagnosis of the case then having been satisfactorily solved, and the point having been determined that the case is one of fibrous tumour attached to the base of the skull, the question arises as to what mode of procedure is to be adopted; and it is to this point that we wish more especially to refer, since surgeons, especially on the Continent, differ materially in their mode of proceeding; and the plans proposed for extirpating these growths have been numerous.

It has already incidentally been observed at the commencement of these remarks, that in the opinion of M. Nélaton individuals with these growths rarely live long, and it, therefore, scarcely seems probable that there should be

any difference of opinion as to the advisability or necessity of resorting to any operative measure, especially when we consider that, innocent as these tumours at first appear, they assume before long a most frightful aspect, when they become the seat of frequent hæmorrhage, and produce the foul sloughing mass or fungous growth to which they are liable.

There is one point, however, which should be borne in mind, and which deserves mention in this place; and that is, that these tumours have been occasionally known to undergo spontaneous cure by a process of sloughing.

Such was the case with a patient of Mr. H. C. Johnson some ten or twelve years ago in this hospital;* a young woman who was suffering from naso-pharyngeal polypus, "and in whom the tumour was the source of pretty copious hæmorrhage. Here the operative procedure to be adopted became a topic of serious consideration. The tumour had been extracted from the throat on a previous occasion by means of polypus-forceps, with a peculiar curve which enabled them to be applied behind the velum palati; but its rapid recurrence showed the uselessness of any operative proceeding which did not attack the very base of the tumour. It was accordingly proposed to divide the soft palate, and endeavour to remove the whole growth from the pharynx; when, fortunately for the patient, the morbid tissue was attacked by rapid sloughing, which so entirely removed it, that no trace could be discovered of any part remaining. She left the hospital in perfect health."

A somewhat similar case occurred under the care of Mr. Birkett,† in Guy's Hospital, in a strumous boy, aged thirteen, who first came under observation in 1851, suffering from polypus in the posterior nares and pharynx. The boy suffered from severe hæmorrhage, which at one time was so great as to necessitate ligature of the common carotid artery. In this case the whole of the tumour sloughed away through a sinus which formed on the cheek; and seven years after the first appearance of the disease the patient is reported as being quite well, the tumour entirely disappeared, and the sinus in the cheek healed.

* *Brit. Med. Jour.* January 1858, p. 61.
† Ibid. vol. i. p. 119, 1858.

Such cases must, however, be very rare, and, on account of the rich supply of blood to these tumours and their consequent great vascularity, only very occasionally met with; so that, in the vast majority, the question of some operation or other becomes a matter of serious consideration.

The modes which have been at various times advocated for the removal of these growths are numerous. In the first place M. Nélaton proposes to remove the tumour by the mouth; a plan which presents several modifications, and possesses for its great advantage the fact that it produces no deformity. Secondly, there is the method first introduced by M. Flaubert of Rouen, of endeavouring to extirpate the disease by removing the whole or a portion of the superior maxilla; which is also subject to a number of modifications, and the great advantage of which is, that the root of the tumour is fairly exposed, and the disease is thus more likely to be permanently eradicated. Thirdly, there is the method by which a successful removal is endeavoured to be brought about by laying open the cavity of the nostril, in one or the other way presently to be mentioned. Fourthly, cases are recorded where the disease has been successfully removed with a ligature. And, lastly, are the examples where a successful issue has been brought about by passing a galvanic current through the tumour.

We shall examine these various modes of proceeding somewhat more in detail.

In the first method, namely, that by the mouth, an endeavour is made by cutting through the roof of the mouth to reach the origin of the growth, and thus remove it. Three several ways are recommended; either by, first, incision of the soft palate through the median line; secondly, division of the hard palate alone, and, if necessary, removal of a portion of it, care being taken, as recommended by Professor Sédillot,* to preserve the periosteum; and, thirdly, division of both hard and soft palate.

The operation is described by M. Nélaton† in a case of naso-pharyngeal polypus, upon which he operated. The soft palate was first divided, and the mucous membrane having been stripped off the roof of the mouth, the hard palate was

* Schmidt's *Jahrb.* cxv. p. 233.

† *Bulletin de la Société de Chirurgie,* vol. i. p. 159.

chipped away with cutting forceps, until sufficient had been removed to expose the root of the tumour; the outgrowth was then removed with a pair of curved scissors. The interesting point in connection with the case described by M. Nélaton is the fact that he deemed it necessary to keep the wound open for some days, "in order to apply caustic to the portion of the polypus which he had been obliged to leave attached to the upper wall of the nasal cavity." For this fact just illustrates the one important, and to our mind insuperable objection to this operation, namely, that it is impossible by this means to expose the origin of the disease, and therefore thoroughly to eradicate it; so that this method really possesses very little advantage over an attempt to remove the tumour by the ordinary method of seizing and pulling off the growth; especially if peculiarly curved forceps, made to hook round the soft palate, be employed, as in Mr. Johnson's case cited above. If it were not for this objection, there is no doubt that this method is far to be preferred to any other, since it produces no disfigurement, no healthy part is sacrificed, in favourable cases the operation may be completed without cutting through bony structures, and therefore there is less risk of unfavourable consequences, and according to M. Nélaton there is little loss of blood, there is no threatening of suppuration, no difficulty in swallowing after the operation, and the edges of the wound show a great tendency to unite. This tendency to unite was so great, indeed, in the case cited above, that on two separate occasions on the two days subsequent to the operation, M. Nélaton found the edges of the wound united, and required to break them down in order to apply his caustic. But in spite of these numerous and unmixed advantages the operation has not found favour in this country, on account of the fact that by this means the eradication of the disease is not certain; while it is possible, by an operation, which perhaps is more severe, but which happily is not so often followed by evil consequences as might be at first sight supposed, to almost confidently promise our patient a total extirpation of the tumour.

It has just been stated that one of the advantages of this mode of proceeding is that it is rarely followed by unfavour-

able results; but that this cannot be looked for in every case is shown by the following example, which was brought before the notice of the Surgical Society of Paris by M. Foucher,* and is interesting as showing the great difficulty there is in dealing with these tumours when attacked through the mouth. "An incision was made through the soft palate, so as to allow the finger to explore the pharynx and the attachment of the polypus. Much hæmorrhage occurred; but efforts were nevertheless made through the palatal aperture, to remove portions of the large polypus situated in the pharynx. Pieces of it were brought away by means of a vulsellum and scissors: but the operation weakened the patient considerably. Subsequently, attempts were made to cauterise the remaining portions of the polypus; but about three weeks after the first operation, the patient, a young man from the country, died of pyæmia, with purulent deposits in the liver."

The second method of operating, which has been had recourse to for extirpating these growths, consists in a removal of the superior maxilla or a portion of that bone. The original operation as practised first by M. Flaubert of Rouen,† consisted in removing the entire bone; this was followed by a proposal by M. Maisonneuve,‡ to deal with the growth by removing only a portion of the bone; and subsequently Professor Langenbeck,§ instead of removing the bone, simply displaced a portion of it, and having extracted the tumour, replaced the bone and allowed it to reunite; this plan has been further modified by M. Roux,‖ who recommends displacement of the whole bone.

The operation, as first performed by M. Flaubert, was much condemned at the time, as a most hazardous undertaking; but in the course of a short time other cases were treated in the same manner by MM. Michau, Maisonneuve, and Robert, and with success. It is curious, however, that no case is recorded where this operation was performed in

* *Lancet*, November 26th, 1859, p. 541.
† *Bull. de la Société de Chirurgie*, vol. i. Oct. 1849, p. 397.
‡ *London Medical Review*, No. iv. p. 204.
§ Schmidt's *Jahrb.* cxiii. p. 198, and *Deutsche Klinik*, 1861, p. 281.
‖ *Gazette des Hôp.* 1861, p. 337.

this country for some ten or twelve years after the operation was established on the Continent. It is true that there are two cases where it was attempted or proposed. One, Mr. Hewett's case, alluded to above,* where, owing to the course which the tumour took, the diagnosis was uncertain, and in which the man, as will be remembered, died on the table, whilst under the influence of chloroform, from paralysis of the muscles of the glottis, and consequent bleeding into the air-passages. The other, Mr. Birkett's case, quoted above,† where the operation was proposed, but declined by the parents of the patient.

It was not till the year 1857, that Mr. Tatum, for the first time in this country, successfully removed the superior maxilla for naso-pharyngeal polypus. The case is so well known that it is unnecessary to do more than give a very brief summary of it.‡ The patient was a lad, aged 16, in good health, and without any history of cancer in the family. Epistaxis, the first symptom, had existed eighteen months, followed by dyspnœa, stertor in breathing, and occlusion of both nostrils. When admitted there was slight fulness of the right cheek, but no tumour externally. The palate was depressed by a large lobulated growth, which could be felt behind it. The right nostril was entirely occluded, the left nearly so. There was no deafness, and he could swallow quite well.

The operation was performed by two incisions, and a triangular flap dissected upwards. The superior maxilla was removed entire, and the tumour readily exposed and separated. It was attached to the body of the sphenoid, between the pterygoid processes, whence a portion had passed up into the sphenoidal sinus, but was easily extracted. The wound healed in about ten days, and the boy made a good recovery.

Since this time the operation has become a recognised one in English surgery, and has been frequently performed. In a great measure, however, it has given way to the plan proposed by M. Maisonneuve of removing a portion only of the bone; a method which enjoys several advantages, and if

* Page 154. † Page 157.

‡ A full report of the case is given in *Brit. Med. Jour.* Jan. 1858, p. 119.

the tumour be not very large, and has not extended itself through the various chinks and fissures in this situation, is equally efficacious, and presents quite enough room to attack the origin of the disease.

This plan of proceeding is well illustrated by the following case, which occurred in St. George's Hospital during last year.

Amos S., æt. 27, was admitted, under the care of Mr. Holmes, on May 30th, 1866.

He stated that he had suffered from bleeding from the nose and mouth for the last eighteen months, and that occasionally the hæmorrhage had been extremely severe in its nature. In consequence of this epistaxis, twelve months before his admission he was discharged from the army; and six months after, he was an in-patient at one of the other metropolitan hospitals, under *medical* treatment. It appears that at this time no especial examination of the nose was made, and the true source of the hæmorrhage was not ascertained. Three months afterwards, however, he began to notice that his nose was becoming swollen, and that he was unable to breathe through the left nostril. This led to a careful examination, and a polypus was discovered. When admitted there was seen to be very peculiar distortion of the features, due to bulging of the nasal bones and nasal processes of the superior maxilla, and this was especially noticeable on the left side. He presented an extremely exsanguine appearance, and gave one almost the idea of a patient suffering from malignant disease. The left nostril was seen to be occupied by a soft, smooth, reddish growth, which bled freely when touched. The hard palate was found to be somewhat pushed down and to have lost its concave form, and projecting behind the soft palate could be seen a somewhat similar growth to that growing in the nose. The left nostril was entirely occluded, so that no air could be forced through it, nor could a probe be passed into the pharynx.

On June the 7th, the operation was commenced by a single incision from the inner canthus of the eye down the side of the nose, and continued through the upper lip in the mesial line. The flap having been dissected up, the bone was first divided by a key-hole saw through the malar tuberosity: the bone was then divided into two, leaving the floor of the orbit, by the bone forceps, carried along the lower margin of the orbit. The other attachments having then been divided in the usual manner, and the bone having been severed from the soft palate, it was easily removed, and the origin of the tumour from the base of the skull exposed. The polypus was now grasped and easily extracted. The surface of bone from which it grew was carefully examined, and was considered to be healthy. The flap was re-adjusted, and maintained in position by a few silver sutures. There was very little bleeding during the operation, no vessel requiring a ligature. The man made a

**good recovery, and left the hospital with the wound quite healed, on July 10th. The tumour was found to consist of two lobes; the larger of these, which resembled in size and appearance a cow's teat, was lodged in the nostril; the smaller projected into the pharynx. The tumour was essentially fibrous in structure.**

This mode of proceeding, of removing only a portion of the bone, appears to possess considerable advantages in cases where the growth is not too large and has not prolonged itself into the various clefts and fissures. In the first place, the bone can be easily removed by a single incision, and therefore there is less deformity; and secondly, the floor of the orbit is not interfered with, and thus there is a firm support to its contents. And, as is well shown in the case given above, there is plenty of room to attack the origin of the disease.

This mode of operating, namely, by extirpation of the whole or a portion of the upper jaw, has been modified by some Continental surgeons, who recommend a partial or complete resection of the bone. Thus M. Roux,* of Toulon, proposes a displacement of the whole upper jaw; while Professor Langenbeck† and M. Huguier‡ have advocated a partial resection of the bone.

M. Roux regards the malar and superior maxilla as one bone; he only incises the soft parts at the points which correspond to the portions of bones he desires to divide. Thus, he commences by a transverse incision, half an inch in length, over the junction of the malar with the frontal bone, and divides the bone in this situation. Secondly, a vertical incision over the zygoma, and division of the junction of the malar bone with the zygomatic process. Thirdly, an incision from the inner angle of the orbit down the side of the nose and through the middle line of the lip, and section of the bone as before; and, lastly, division of the hard palate in the middle line, and separation of the soft palate from the bone. The bone is then firmly seized, and turned upwards and outwards, so as to expose the polypus; and this having been removed, the bone is replaced, and kept in position by sutures passed through the hard and soft parts.

* *Gazette des Hôpitaux*, 1861, p. 354. † Schmidt's *Jahrb.* c. xiii. p. 198.
‡ *Gazette des Hôpitaux*, 1861, p. 337.

Professor Langenbeck concludes that "to render tumours of the naso-pharyngeal cavity and of the neighbouring parts accessible, it is sufficient to partially resect the upper jaw, and that in future extirpation of the whole jaw for this purpose should be abandoned."

It would appear, however, that the advantages to be gained by this mode of proceeding over extirpation do not counterbalance the greater difficulty and duration of the operation, the protracted nature of the recovery, the difficulty of maintaining the bones in position, and the risk of no union taking place. The chasm left by the extirpation of the bone speedily becomes filled up with a dense, fibro-cartilaginous material, which answers every purpose; and with a set of false teeth and obturator the patient is able to masticate, swallow, and speak without difficulty.

We now pass on to a consideration of the third method of removing these growths, by laying open the cavity of the nose.

Professor Langenbeck of Berlin describes this operation,* which consists in resecting the nasal bones and the nasal process of the superior maxilla, leaving a bridge of periosteum by which the bones remain adherent to the neighbouring parts, and which permit them to reunite after the polypus has been removed and the bones replaced. Professor Langenbeck has performed this operation with perfect success. The union appeared to be complete at the end of fifteen days, and left neither swelling or tenderness.

M. Chassaignac, on the same plan, has operated by removal of the nasal bones, of the septum, and of the turbinated bones.

The following case illustrates the mode of proceeding when the surgeon is desirous of attacking growths in this way.

Thomas L., æt. 53, labourer, was admitted into St. George's Hospital on July 1st, 1863, under the care of Mr. Hewett.

He stated that twenty years ago a small growth was occasionally noticed in his nostril. This increased slowly for fourteen or fifteen years, when it began to interfere with his respiration: it was therefore pulled out by a medical man. In two or three years it again returned;

* *Lancet*, Feb. 4th, 1860, p. 129, and *Deutsche Klinik*, No. xlviii. 1859.

and twelve months before admission, according to his own statement, it began "to grow down his throat." Six months after, it began to increase very rapidly, and to interfere with his respiration and speech. When admitted, the nose was found to be flattened, and the nasal bones pushed out of their place, the nose being at least an inch wide. The expansion was almost entirely confined to the right side. The right eye was very prominent, and was pushed outwards; the floor and inner wall of the orbit could be felt bulging into the cavity. The nostril on the left side was found to be filled with a firm tumour, so that a probe could not be passed through it. On passing the finger into the mouth, the whole of the upper part of the pharynx, behind the soft palate, was felt to be occupied by the same growth. On July the 9th the patient, having been placed under the influence of chloroform, an incision was made from the inner canthus of the eye down the side of the nose; the flap was then dissected towards the median line; the nasal bone and the nasal process of the superior maxilla were divided with cutting forceps and turned up, thus exposing the whole of the nasal cavity. A pair of polypus forceps were then passed up to the origin of the disease; the root was seized, and the polypus extracted. As far as could be ascertained, the surface from which it grew was healthy; but a very clear view could not be obtained, owing to rather free hæmorrhage. The bone and flap were replaced, and kept in position by sutures. The man made a good recovery; the wound united for the most part by the first intention, and he was discharged cured.

In this case the tumour was small, and the root of the disease was easily reached, and there was plenty of room to extract it. If, however, the tumour is of large size, and especially if it has encroached upon the various cavities of the face, there is scarcely sufficient room for its removal by this mode of proceeding. In cases, however, where this is not so, this operation appears to possess several advantages, among which may be mentioned, principally, the fact that it is easy of performance, is attended by very little danger, and produces comparatively little disfigurement.

Besides these three principal modes of operating, other methods have been at various times recommended. Thus Dr. Edwards* removed one of these growths by passing an iron ligature along the floor of the nostril into the fauces, opening it with his fingers, and slipping it round the tumour. By strong traction the upper part of the tumour was dragged forward, seized with a pair of polypus forceps, and wrenched off.

* *American Medical Times*, April 20th, 1861, p. 265.

And, lately, Mr. Bryant* exhibited at the Pathological Society a polypus which he had removed with the écraseur.

The polypus was removed from a boy, aged 15: "It had originally appeared in the right nostril, but had ultimately occluded both posterior nares and pushed forward the soft palate. Severe epistaxis had repeatedly occurred, and ultimately there was difficulty experienced in swallowing. The écraseur was employed for its removal, but only a small and weak one could be introduced, and the screw could only be tightened gradually. In five days it came away, but the polypus did not fall off; for a time it appeared to shrivel away, but in nine months the boy was sent back to the hospital as bad as ever. The tumour was again carefully examined, and was found to be attached to the posterior wall of the pharynx. On this occasion whipcord was used instead of wire, and again the écraseur came away on the fifth day, but this time the tumour came with it."

There are, however, the very gravest objections to these plans of operating; and the remarks which were made when speaking of the mode by incision through the palate apply with tenfold force to this plan—namely, that there is an impossibility of attacking the real seat of the disease, and therefore of totally eradicating the tumour. Several cases may be found recorded in which the disease has been treated in this way, but in none is the subsequent history given; so that one is unable to form any positive opinion of its results. It would appear, however, to possess little, if any, advantage over the old method of removal by the forceps; and that this is totally inadequate to remove the disease is proved by the following case:

A little boy has been under the care of Mr. Prescott Hewett, at intervals, for the last eight years, suffering from naso-pharyngeal polypus, which has been removed no less than seven times, and the disease eradicated as far as could be by passing curved forceps as near to the origin of the disease as possible. But still, after every operation, it has returned. It should be mentioned that the friends object to any more radical proceeding.

* *Medical Times and Gazette*, July 30th, 1864, p. 126.

Lastly, must be noticed a method for the removal of these growths, brought under the notice of the Academy of Sciences by M. Nélaton in 1864;* namely, the treatment of deep-seated naso-pharyngeal polypi by electricity. "Certain tumours of this kind defy all surgical procedures, while, even when of possible execution, they give rise to great mutilations of the face, which are afterwards susceptible of only partial reparation. After having observed in experiments upon animals that an energetic and continuous electrical current induces the mortification and destruction of the parts into which the needles are implanted, M. Nélaton conceived the idea of employing these in deep-seated polypi. It was not, however, without some hesitation that he put the procedure into force, as it was doubtful whether hæmorrhage, excessive suffering, or injurious effects on the spinal cord or brain might not result. He, nevertheless, resorted to it in the case of a young schoolmaster, 20 years of age, employing Bunsen's pile, with nine plates, and two platinum needles, half a millimetre in diameter. Six séances were required, separated by intervals of ten days, the patient entering the hospital in January, and leaving it cured on May 28th. There was neither pain nor hæmorrhage of any account, the chief inconvenience being produced by the falling of a white foam into the pharynx, produced by a decomposition of the parts into which the needles were implanted."

Such, then, would be the various methods which have at different times been proposed for the treatment of naso-pharyngeal polypi.

To sum up, it would appear that the methods by the palate and by the ligature are inadmissible on account of the fact that the root of the disease cannot be reached. Of the method by the galvanic current we do not possess sufficient experience to speak with any degree of certainty. There remains, then, only the methods by the nose and by the removal of the superior maxilla. The former of these methods is applicable to and is to be preferred in polypi of small size: whilst the latter must be employed in cases where the tumour is large, and especially where it has prolonged itself in the manner mentioned above. If we wish to com-

* *Medical Times and Gazette*, March 16th, 1867.

pare excision of the bone and resection, the latter does not appear to possess sufficient advantages to overweigh the accidents which may result.

One point, in conclusion, remains to be mentioned, namely, the probability of the return of these tumours after removal; and this is, undoubtedly, of the very greatest importance, and without this, cases of this kind are of little value as to the history of such growths. But, unfortunately, it is the one on which our knowledge is the most imperfect, since cases are recorded soon after the operation, and then never again alluded to. Only the cases, therefore, which have fallen under my own notice illustrate this portion of the subject. Of these, Mr. Tatum's patient, the case in which the operation was first successfully performed in this country, was seen in 1864, or seven years after the operation, and up to that time he had remained free from the disease. Mr. Hewett's case, in which he removed the disease by abduction of the nasal bone, was seen two years after the operation, and he was then quite well. He promised if he had any return of the disease to reapply at the hospital, but he has not since been heard of. Mr. Holmes's case, where the operation was performed last year, continues well up to the present time.

THOMAS P. PICK.

## XII. ON CROUP AND DIPHTHERIA.

THIS paper is not intended to present any systematic investigation into the above-named diseases, but will simply consist of remarks and suggestions, deduced from observation at the bed-side and post-mortem table, upon their pathology and treatment.

At the outset of any inquiries concerning these diseases there arises this: Is it correct to speak of them as two diseases, or are the conditions to which the name of 'croup' and 'diphtheria' are applied merely variations of the same disease?

On this question opinion is still divided, and I think it will be worth while briefly to discuss it; because I suppose it to be one not merely of words, but of considerable importance, as likely materially to influence the treatment. And as my own opinion is decidedly in favour of the distinctness of the diseases, it will probably conduce to brevity and clearness if I simply state my creed, and then give my reasons for holding it, noticing opposing arguments in their appropriate places. I believe, then, that there are two distinct combinations of symptoms with their associated pathological changes, to one of which may be given the name of croup, to the other diphtheria; that these combinations are constant, and that the elements or terms of the one are never mixed with the elements or terms of the other (though there may be certain added quantities which are common to both); that the constant combinations are of the important and essential elements in each quantity; and that these always occurring in the same and distinct association, there is sufficient ground for regarding each of the two diseases made up of these elements as distinct and non-identical.* This will perhaps be made clearer by a kind of algebraic method.

* No strictly logical definition of the subject "disease" is here attempted; but it will be seen that the text involves some such as this:—a distinct

If $(a+b+c)$ represents a combination of symptoms that we will call diphtheria, and $(x+y+z)$ a combination that we will call croup, these being combinations of important and essential symptoms; then, we never find such a combination as would be represented by $(a+b+x)$, $(a+b+c+z)$, or $(a+x+y)$. Any of the terms may be absent. Thus we may find $(a+b)$ or $(x+y)$; but if we have $(a+b)$, we may predict $c$, and not $x$, $y$, or $z$, being associated with it. Sometimes terms common to both may be added; but these are symptoms of less importance and value (accidents, and not properties). Thus, $\alpha$ and $\beta$ may be common to both quantities, $\alpha$ and $\beta$ being understood to be of greatly less value than $a$ and $b$. Thus, we may have $(a+b+c)+\alpha$, and $(x+y+z)+\alpha$. As, for instance, epistaxis may occur in both diseases, and be represented by $\alpha$. Or they may be affected by a common influence, as the sign — representing a depressing influence, thus we may have $-(a+b+c), -(x+y+z)$; but the quantity $(a+b+c)$ must be regarded as totally distinct from the quantity $(x+y+z)$.

What are supposed to be the notes of each disease will appear from the following divisions with their elucidations:

1. Diphtheria is an acute specific disease; croup is a local inflammation.

2. Diphtheria is contagious; croup is not.

3. Diphtheria is epidemic; croup is not.

4. Diphtheria is an asthenic disease; croup is a sthenic inflammation.

5. The exudation in diphtheria attacks first the fauces and pharynx; but in croup the trachea.

6. Diphtheria attacks persons of all ages; croup is a disease of children.

7. There is usually albuminuria in diphtheria; but not in croup.

8. Diphtheria is frequently followed by nervous derangements; which do not occur after croup.

9. Changes occur in the spleen in diphtheria; which are not found in croup.

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and constant combination of symptoms with their associated pathological changes; using the word "symptom" in its conventional sense of an indication of an abnormal condition.

10. Blood-changes occur in diphtheria; which are not observed in croup.

Each of these divisions I will now briefly consider; and, in so doing, will introduce all I wish to say of the nature of the diseases, and afterwards go on to speak of their treatment.

1. Diphtheria is an acute specific disease; croup a local inflammation.

The blood-changes* observed in diphtheria, and the numerous organs† affected, together with the onset and progress‡ of the affection, are sufficient evidence of its being an acute specific disease. That croup is a local inflammation, and that its danger arises from the importance of the part attacked, is clearly shown by the post-mortem appearances. The symptoms and course of the affections correspond with this distinction. Diphtheria sets in with the usual symptoms of an acute specific disease—aching back and limbs, sighing and yawning, severe headache, quick and weak pulse. In contrast with this, a child may be running about in apparent health immediately before the onset of a severe attack of croup, the first symptom of which is the altered voice and respiration. In diphtheria the tongue is moist with a creamy fur, becoming later dry and brown; in croup it is white and dry, with red tip and edges. In diphtheria there are the shining, swollen, and painful fauces and tonsils, painful deglutition, stiff-neck, earache, enlarged cervical and submaxillary glands, and salivation; in croup nothing of the sort, or only a little general redness over the mucous membrane of the throat. Then there is the pale albuminous urine of diphtheria, contrasting with the loaded urine of croup. In diphtheria the first local symptom is coryza and the exudation on the fauces; the laryngeal symptoms, if they occur, coming on after several days of illness. Croup exhibits, at its very commencement, laryngeal symptoms. Diphtheria is frequently fatal, independently of any laryngeal affection; in croup the sole danger is from the obstructed respiration.

In diphtheria the disproportion between the amount of local mischief and the constitutional disturbance, the fact that false membrane frequently appears on abraded surfaces

* See page 178. † See page 177. ‡ See below.

or mucous membranes other than that of the throat,* and the gravity of its sequelæ, are all characteristic of a blood-disease.

It may be convenient here also to note that diphtheria is not, as some have asserted, a form of scarlatina. For besides the manifest difference in the symptoms and course of the diseases, as, *e.g.* the absence in diphtheria of rash and the pungent heat of skin; also of the characteristic scarlatinal tongue, with its large red papillæ; the fact that albuminuria occurs early in diphtheria and late in scarlatina; that it is not associated with hæmaturia or dropsy in diphtheria; that in scarlatina there is no tendency to the laryngeal or nervous affections of diphtheria, nor in diphtheria to the serous inflammations of scarlatina;—besides all this, there is the fact that the one disease is no protection from the other; and I have notes of two cases (and there are others on record) in which patients caught scarlatina while still under treatment for diphtheria.†

2. Diphtheria is contagious; croup is not.

There are many cases on record proving the contagious character of diphtheria; some of the most convincing being those given by Dr. Jenner. Thus, a boy was admitted into the Children's Hospital with diphtheria, and the child in the next bed had the disease within thirty hours; there being no other known source from which he could have caught it.‡

A boy, a fortnight after being attacked with diphtheria, was removed to a village where the disease did not exist; and shortly afterwards another of the family, who had been living at the village, had the disease.§ I have notes of a case in which a child in the Children's Hospital was under surgical treatment for distortion from paralysis and nervous disease, and was apparently in otherwise good health. She occupied the next bed but one to a case of diphtheria; in a week she became ill, with great depression, and soon after complained of sore-throat, with enlargement of the submaxillary glands. A diphtheric patch was discovered on the tonsils, and she died in three days, from the depression

* See *Greenhow on Diphth.* chap. ix.

† See *West on Dis. of Child.* p. 423. ‡ *Jenner on Diphtheria*, p. 83.

§ Jenner, op. cit. p. 52. See also *Greenhow on Diphtheria*, p. 138.

of the disease. Anything more unlike what is ordinarily called croup than this case, it would be difficult to imagine; and I know of no cases in which that disease has been similarly contracted. I do not think, however, that there is sufficient evidence of the direct contagion of which Bretonneau speaks. For Trousseau's experiments upon himself seem to negative the probability of inoculation; and I have several times had portions of the exudation in contact with the conjunctiva, fingers, &c., without any harmful effect; while yet it is common to see those attending upon cases of diphtheria suffering from severe sore-throat, headache, and depression.

3. Diphtheria is epidemic; croup is not.

Anyone watching hospital practice must have noticed this distinction, so that it is sufficient to mention it.*

4. Diphtheria is an asthenic disease; croup a sthenic inflammation.

Upon this distinction I would lay especial stress, as it has an important bearing on the treatment of the two diseases. In diphtheria there is, from the first, intense depression; the pulse is rapid and feeble, and the patient rapidly sinks into a typhoid condition; and I believe that no depressing remedy ought *ever* to be used in this disease. As soon as we make up our mind that a case is one of diphtheria, however mild, we must especially be on our guard against any depressing influence. But in croup the relief from depletion is very often most immediate and striking. Of course, we may see the asthenic disease occurring in

* It would be wrong, however, not to mention that Dr. Hillier (whose experience of the disease is very large) interprets this differently. In a paper published in the *British Medical Journal*, 1864, p. 350, he makes these remarks: "Diphtheria is epidemic; croup is not,—so it is said. This is begging the question. I believe diphtheria to be epidemic croup; and, just as in other diseases, the characters are modified during the prevalence of an epidemic. The disease is more asthenic, it attacks a larger number of adults, lays hold of the constitution more severely, and is accompanied by graver sequelæ. Moreover, if the pharynx is more frequently attacked in the epidemic than the sporadic cases, this is only analogous to what is seen in scarlatina, in some epidemics of which the throat is much more seriously affected than it is in others." With great respect, I would suggest whether the remark concerning "begging the question" does not apply as much to that which follows as to that which precedes it in this quotation.

strong sthenic patients, and the sthenic disease in debilitated patients; but I wish particularly to insist on the essential difference in this respect between the two diseases, so that in however strong a patient diphtheria may occur (thus perhaps having its depressing character at first somewhat masked), we may not be tempted into any lowering measures. In croup, on the other hand, vigorous measures at the first may often save the patient from the exhausting effects of the laborious respiration, for the exhaustion in croup is in proportion to the dyspnœa, and not, as in diphtheria, an essential element in the disease. This consideration should also incline us to resort to tracheotomy earlier in diphtheria than may be needful in croup, knowing that the patient is less able to combat the fatigue of difficult respiration.

5. The exudation of diphtheria attacks first the fauces and pharynx; but in croup the trachea.

This statement no doubt requires some modification. For although in the great majority of cases of diphtheria the exudation occurs first on the fauces, yet there are cases in which the trachea may be primarily attacked; and in such cases this distinction from croup is of course invalid. Dr. Jenner has described them under the name of primary laryngeal diphtheria. They are exceptional. Also the exudation may take place first on the posterior surface of the velum palati, and on the membrane of the posterior nares, constituting the nasal form of diphtheria; but in this form it usually soon extends to the tonsils, and becomes visible. However, coryza, with enlarged and tender submaxillary or cervical glands, with depression and quick weak pulse, should always lead us to suspect diphtheria, and to carefully examine the throat daily. I may here state, that with regard to the distinctions that have been made between the characters of the exudation in croup and diphtheria, I have failed to detect them. The microscopical appearances often differ considerably in portions of membrane taken from different parts in the same case; and the exudation is sometimes not membranous at all, but puriform.

It has been said * also that cervical abscess does not occur in connection with diphtheria. But I have seen two cases

* Squire, in *Reynolds' System of Medicine*, vol. i. p. 400.

of unquestioned diphtheria, in one of which there was suppuration of the glands on both sides of the neck, in the other on one side only, forming, however, a large cervical abscess. Both these cases died; the first from failure of the heart's action with pharyngeal paralysis, which ensued after the throat was well; the other from the exhaustion of the disease. Neither had laryngeal symptoms. I have also notes of a case of diphtheria complicated with retropharyngeal abscess, of which (as I know of only one such case on record*) I subjoin a brief account. The child was seen as an out-patient at the Children's Hospital by Dr. Dickinson, who kindly allows me to publish it.

A well-nourished, healthy-looking, fat girl, ten months old, was brought to the hospital with a history of having been ill, cross, and disinclined for food, for four days; but the mother had observed nothing to alarm her till the morning of the fifth day of illness, when she observed that its breathing seemed rather difficult, and that there was swelling of the neck. When seen (the 5th day) the child was breathing with some difficulty, but without stridor. There was slight recession of the soft parts of the chest, a quick but not weak pulse, moist furred tongue, hot and moist skin of natural colour, some diffused swelling about the neck and angle of the jaw, and redness of tonsils and palate; the chest everywhere gave a resonant sound on percussion; the breath-sound was exaggerated; no rash, no illness in the house, no diphtheritic deposit visible. The urine could not be collected. Antimony was given in small doses.

Next day (6th of illness) she was very much the same, except that there was slight stridor with the respiration, and the pulse was weak. Antimony omitted. An ipecacuan emetic given with some relief; but no membrane was expectorated.

7th day.—There was now, added to the redness of the tonsils, some swelling, not sufficient, however, to account for the dyspnœa, which had increased during the night, but was still not very great. Ipecacuan and carbonate of ammonia given.

8th day.—There was more dyspnœa and recession of chest, yet very slight stridor. On listening to the chest the air was only heard in the larger tubes. The external swell-

* Greenhow, op. cit. p. 237.

ing about the neck was increased, but nowhere gave evidence of matter; the tonsils and palate were red, but had no false membrane upon them. On making a very careful digital examination of the throat, there was a feeling of some hardness and swelling at the back of the pharynx; but fluctuation was not detected. With Dr. Dickinson's approval I thrust a bistoury into the swelling. It was impossible to say whether any matter was evacuated; but the child was somewhat relieved. The mother stated that for some hours afterwards the child seemed easier, and breathed more quietly; but that during the night the respiration again became worse, and it died in a convulsion the next morning. With some difficulty I obtained permission to examine the chest; but the friends would not permit me to open the abdomen.

Post-mortem examination twenty-four hours after death. —Body in good condition; a good deal of diffused swelling about the neck; no suppuration; soft palate very much thickened, and on its posterior surface a tough false membrane, which could be separated with difficulty, leaving a raw, red surface beneath. On the left tonsil, the tip of the epiglottis, and the interior of the larynx and trachea, was a thick false membrane, which extended even into the minute divisions of the bronchial tubes. All the bronchial mucous membrane was highly congested; the lower lobe of the right lung congested; the other parts of the lungs normal; the other thoracic organs normal. There was an abscess, containing about two drachms of pus, between the pharynx and spine, not connected with diseased bone.

Here the diagnosis was no doubt difficult, and rendered more obscure by the existence of the abscess; but the post-mortem examination clearly showed that it was a case of diphtheria, in which the exudation commenced either on the posterior surface of the palate or on the trachea; the portion found on the tonsil (thus rendering it visible) must have been formed during the last few hours of life, after the child was seen for the last time.

6. Diphtheria attacks persons of all ages; croup is a disease of children.

I do not pretend that statistics *prove* anything on this point; but the distinction between the two varieties (as they

would say) of the disease is admitted even by those who uphold the identity of the two affections.* Children are only *more liable* to diphtheria than adults.

7. There is usually albuminuria in diphtheria; not in croup.

And this albuminuria occurs early in the disease. It is said not to materially affect the excretion of urea. It is never (or very rarely) associated with hæmaturia. I have never seen blood-globules in diphtheritic urine. The albuminuria is not persistent after recovery, nor have I ever seen it lead to anasarca.† No doubt albumen may appear in the urine of croup, as in any acute inflammation; but it is the exception; whereas in diphtheria it is the almost invariable rule. Out of 25 cases which I have seen (mostly at the Children's Hospital), in 20 at least there was albuminuria; and my impression is that I have seen no exception to this rule; but of the other five cases I cannot speak certainly, not having noted the fact. The quantity of albumen present has not seemed to have any definite relation to the severity or result of the disease. The kidneys are found of a dull brown colour, congested, and with the Malpighian bodies very distinct.

8. Diphtheria is frequently followed by nervous derangements; which do not occur after croup.

Concerning this, I will only observe, that the paralysis does not usually follow immediately upon the disease; but the patient seems quite to have recovered, and then the paralytic symptoms gradually supervene; and the frequency of the sequential paralysis does not bear any relation to the severity of the primary disease.

9. Changes occur in the spleen in diphtheria; which are not found in croup.

In 11 of 15 post-mortem examinations of cases of diphtheria that I have seen, the spleen was enlarged, softened, and dark-coloured, and in every case the Malpighian tufts were of unusual distinctness.‡

* See note page 173; and for tables on the subject, West, op. cit. p. 374; Squire, in *Reynolds' System of Medicine*, vol. i. pp. 377 and 239.

† Dr. Humphry of Cambridge, however, describes a case in which anasarca occurred, *British Medical Journal*, July 4th, 1863.

‡ In this, as also with regard to the appearance of the kidneys, my

10. A peculiar condition of the blood is found post mortem in cases of diphtheria. It is usually very fluid, and of a peculiar dirty-brown colour, staining the organs of the same tint.

To these distinctions it has been objected, that cases are met with, of which, at some period of the disease, it is impossible to say whether they are croup or diphtheria. That such cases do occur I have no doubt; but that they furnish any argument for the identity of the diseases cannot be maintained, any more than the fact that there are cases of which it is impossible to say whether they are varicella or pemphigus, scarlatina or measles, syphilitic or scrofulous, militates against these several diseases having essential differences.

I will now proceed to a few suggestions with regard to the treatment of the diseases.

And first of croup. I have no doubt of the value, if the case is seen early enough, of bleeding and antimony. I should be inclined to trust to local bleeding, by leeches to the throat; and as to the antimony, it is important that it should be given in emetic doses, as simply nauseating doses do little or no good.* A mercurial belt may also be applied.† Added to which I would strongly recommend keeping the child in a warm and moist atmosphere, which is done at the Children's Hospital by enclosing the bed in curtains, and directing into the tent thus formed a fine jet of steam. If, however, the child is in the second stage, when the lividity and drowsiness show it to be suffering from the non-aëration of the blood, the time for antiphlogistic treatment is past, and stimulant

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experience is quite at variance with the statement of Mr. Squire, in *Reynolds' System of Medicine*, who speaks of the spleen as usually pale, and presenting a cloudy or opaque section, and of the kidneys also as usually pale. There is a beautiful drawing, by Mr. Tuson, in the Museum of the Children's Hospital, exhibiting most accurately the appearance of these organs.

Of 24 post-mortem examinations of cases of diphtheria recorded in the *British Medical Journal* for 1864, p. 458, in twenty the kidneys are described as "congested;" but the spleen is only thus described in two.

* See West, op. cit. p. 387.

† That is, a belt of flannel on which is spread mercurial ointment.

emetics, such as ipecacuan and ammonia, must be given, with senega and ammonia in the intervals. But these means must not be trusted to for long; and if, in spite of them, the respiration is steadily becoming more difficult, tracheotomy should be resorted to. Of this last I will speak again, after having alluded to the treatment of diphtheria.

And it is in this that it is so important to bear in mind the essential difference of the disease from croup. I would again repeat that it is a depressing disease, and that, from the very first, all antiphlogistic measures must be carefully avoided. There does not seem to be any reason to believe that there is any specific for the disease; under any treatment it is very fatal.

And in connection with this subject I would remark as to the statements that sometimes appear of the easy curability of the disease, that the name diphtheria is often applied to cases of simple ulcerated sore-throat. A Canadian surgeon recently told me that he had cured dozens of cases of diphtheria with permanganate of potash; and on inquiring what was the character of the cases, I found the only symptom of diphtheria was an ulcerated sore-throat with a white deposit upon it—no albuminuria, no paralysis, no epistaxis, no laryngeal symptoms. And I have frequently seen cases called diphtheria because of a white deposit on the throat, which, when examined, turned out to be simply ulceration of the tonsils, with a scab of concrete secretion and epithelium covering the ulcerated surface, which had only to heal and the patient was well. These mistakes will greatly account, I believe, for the different statements as to the mortality and curability of the disease; and they are more easily made than would be imagined by those not accustomed to examining children, in whom a complete inspection of the throat is often not to be obtained except by much patience and management.

Of the various medicines that have been recommended in diphtheria I cannot speak with much favour. The much-praised tincture of iron has not seemed to me to have any special effect, nor, indeed, has anything else; but it seems reasonable to give the chlorate of potash and iodide of potassium, to which may be added bark; the chief reliance, however, should be

placed upon stimulants, which should be given freely from the first.* Of local caustics the hydrochloric acid and honey have seemed to me the most effective and least painful; but I have no evidence that cauterisation is of any service, and it is certain that in many cases it fails to arrest the spread of the exudation. If resorted to, it should be done once thoroughly, and not repeated; and it is accomplished best by means of a small piece of sponge held in a pair of long-limbed vulsellum forceps, such as are used in excision of the tonsils. I think that a solution of permanganate of potash is the best gargle; and in children, where the throat must be syringed (on account of their inability to gargle), it has the advantage that it is swallowed with impunity. The strength should be two drachms of Condy's fluid to half a pint of water. The coryza may be much relieved by washing out the nostrils with a similar solution, after Dr. Thudichum's plan. No doubt during the convalescence iron is useful, as also for the sequential paralysis, especially combined with strychnine. When, however, the larynx shows any sign of being affected, the patient should be at once put into the steaming tent, and the symptoms very carefully watched; and if the breathing is getting steadily worse, and is not relieved by one or two stimulant emetics, tracheotomy should be performed. I most decidedly advocate tracheotomy early in diphtheria, because, in an already depressing disease, it is most desirable to avoid the exertion of laborious breathing. That dyspnœa is a cause of great exhaustion no one can doubt who has seen how immediately the patient falls asleep, with an aspect of the greatest fatigue, the moment that he is released from the labour of fighting for breath. It seems, therefore, to me most unwise to allow the patient to get into the last

* The chlorate of potash and bark have a most excellent effect on the cases of diphtheritic sore-throat which prevail with diphtheria; and the iodide of potassium I believe to be one of the best and safest of diuretics for children. But when, as is often the case in children, there is much difficulty in swallowing, the medicine had much better be neglected than the stimulants: the great indication being to support the vital powers, and thus assist nature to combat the disease; for if these fail, medicines are of small avail:

"And certeynly, wher natur will not wirche,
Farwell phisik; go bere the man to chirche."

Chaucer, *The Knightes Tale.*

stage of exhaustion and suffocation before resorting to the operation, when so many die from asthenia in any case. The only cases that I have seen recover after the operation have been those in which it has been performed early, and I do not doubt that the greater success of the operation in France is very much owing to its early performance. This is, I think, less to be insisted on in croup, where the operation may fairly be delayed until the child is drowsy and evidently suffering from non-aëration of the blood, when, if there is much recession of the soft parts of the chest with inspiration, and the child has been vigorously treated, I believe the operation ought not to be further postponed. A valuable indication of the amount of laryngeal obstruction is the sucking away of the pulse with each inspiration. This, combined with much recession of the soft parts of the chest, indicates an amount that cannot long be endured. I have not here discussed the question whether tracheotomy is ever justifiable in these diseases, for I cannot conceive any one who has seen a child dying of suffocation, doubting that it is. For, in addition to the fact that lives have unquestionably been saved by it; even in those cases where a fatal result still ensues, the child is for a time intensely relieved, and often changes a painful for a painless death. I go so far as to think that no child should be allowed to die of suffocation, however bad and apparently hopeless the case; for we have at present no means of judging how far the exudation has extended; and I do not think the existence of bronchitis should exclude the operation, for it gives the patient a better chance of expectoration, and lessens the danger (which is very great in these cases) of collapse of the lung.

Mr. Spence, of Edinburgh,* says that of 13 cases in which he operated on patients *in extremis*, 6 recovered, and nearly all that recovered had bronchitis. And I think no child should be regarded as too far advanced in suffocation for the operation. For in the last case in which I operated, the child (a girl 3½ years old, under the care of Dr. Dickinson, at the Children's Hospital) was brought to the hospital perfectly insensible; intensely livid; with the extremities dark blue and cold; pulseless, though the heart could be felt at long

* *Edinburgh Medical Journal*, 1860, p. 693.

intervals; and giving irregular feeble gasps; yet since the recession of the soft parts of the chest indicated great laryngeal obstruction, and I had ascertained, by an examination of the throat, that there was no obstruction within reach, but that there was a patch of false membrane on the tonsils, I thought it right to open the trachea. Before the operation was commenced, she ceased entirely to breathe, and after the trachea was opened, artificial respiration was maintained for thirty-five minutes before the child gave any sign of life. During this interval warm affusion was several times applied to the head (a plan I had seen used with great effect by Dr. Gee, in a case of suspended animation under chloroform), and it was immediately after one of these affusions that the first gasp was given. In forty-five minutes after the operation she breathed very shortly, and opened her eyes, but could not swallow: respiration was assisted artificially for another half-hour, after which she continued to breathe well, and then took some brandy and milk. Two hours after the operation she was smiling and looking about her, with a perfectly natural colour; in fact, as to the laryngeal obstruction, she was perfectly relieved. The next day she was playing with toys, and only died three weeks afterwards from pyæmia.

Nor do I think any child too young for the operation. Bouchut* quotes a successful case in a child six weeks old. Trousseau,† cases at seven and thirteen months; and I have performed it without difficulty, and with perfect relief to the symptoms, in a child of thirteen months.

Dr. West gives‡ as the latest statistics of tracheotomy in France, 446 cases in the last seven years, of which 126, or 27 per cent, recovered. Trousseau in 1861 had operated more than 200 times, with 25 per cent of recoveries.

At the Children's Hospital since its opening in 1851 to the end of the year 1866, there have been 53 cases, of which 8, or about 15 per cent, recovered.

* P. 275. He also gives (p. 277) a table of 534 cases of croup, of which 374 were operated upon, with a result of 64 recoveries and 310 deaths: of the 160 cases not operated on, 58 recovered, 102 died. He also collects 388 cases of tracheotomy in Paris, of which 42 recovered, 346 died.

† *Clinique Médicale*, vol. i. p. 452-3, 1865.

‡ Op. cit. p. 394, note.

Some details of these cases may be gathered from the tables which follow.

| Disease for which performed. | No. of cases. | Recovered. | Died. |
|---|---|---|---|
| Diphtheria . . . . . | 35 | 5 | 30 |
| Croup . . . . . | 13 | 1 | 12 |
| Chronic laryngeal thickening . | 2 | 1* | 1 |
| Syphilitic ulceration of larynx. | 1 | 1† | 0 |
| No account . . . . . | 2 | 0 | 2 |
| | 53 | 8 | 45 |

| Age. | Boys. | Girls. | Total No. of cases. | Recovered. | Died. |
|---|---|---|---|---|---|
| Under 1 year . . | 1 | . . | 1 | . . | 1 |
| „ 2 years . . | 2 | . . | 2 | . . | 2 |
| „ 3 „ . . | 5 | 3 | 8 | . . | 8 |
| „ 4 „ . . | 9 | 6 | 15 | 1 | 14 |
| „ 5 „ . . | 3 | 6 | 9 | 3 | 6 |
| „ 6 „ . . | 3 | 6 | 9 | 1 | 8 |
| „ 7 „ . . | 1 | 2 | 3 | 1 | 2 |
| „ 8 „ . . | . . | 1 | 1 | . . | 1 |
| „ 9 „ . . | . . | 1 | 1 | . . | 1 |
| „ 10 „ . . | 1 | . . | 1 | 1 | . . |
| „ 11 „ . . | . . | 1 | 1 | 1 | . . |
| No account . . | . . | . . | 2 | . . | 2 |
| | 25 | 26 | 53 | 8 | 45 |

It only remains to add a few remarks upon the operation and the after-treatment.

I am convinced of the correctness of Trousseau's advice, that the operation should be executed slowly. He says‡ he has never seen any harm from too slow operating; and instead of getting hurried because the patient seems to be suf-

* Wearing tube. Subsequently died from other disease.
† Wearing tube.
‡ Op. cit. vol. i. p. 442.

focating, he recommends you to stop, and set the patient up to relieve him from the difficulty caused by the position required for the operation. The only accidents I have ever seen arise have been from haste. The principal difficulty in the operation arises from bleeding; and this can be to a very great extent, if not altogether, avoided by care, but is almost certain to occur in hasty operations. If the patient struggles, and you have the necessary assistance, it is well to give chloroform. I have never seen any harm from this, but it materially helps the operator. In making the dissection, the greatest care should be taken to keep in the median line; and as soon as the muscles, or rather the inter-muscular line, is reached, a blunt knife should be used, and the rest of the dissection made with it. When the trachea is reached (and it should be fairly seen and felt), the isthmus of the thyroïd body should be hooked up or down, as seems most convenient, with blunt hooks, and the trachea opened with a sharp knife, entered with a plunge. Just before entering the knife, the trachea should be drawn upwards and fixed by a sharp hook. It does not in the least matter whether the trachea is opened above or below the isthmus,* but it is most important to fix the trachea before opening it, and to make the aperture in the middle line and large enough at once to admit the canula. It has been advised by some, to wait until all hæmorrhage has ceased or been restrained, before introducing the canula. This is not necessary if, as is usual, the hæmorrhage is venous, for the canula will compress the veins and stop the bleeding, and the veins rapidly become less full when respiration is re-established.

The canula, if used, should be of as large a diameter as the calibre of the trachea will allow, and not too much curved, as they usually are: it should be double, perfectly smooth, with a movable collar fitted to the outer tube, decreasing slightly in diameter from above downwards, the lower end cut slopingly, so that the inferior wall of the tube

* I think no rule can be laid down with regard to this point. In six cases in which I have operated, I have always opened the trachea above the isthmus; but I have seen others in which it would have been just as easy, or easier, to hook up the thyroïd body, and open below it, as in fact was sometimes done.

terminates before the superior, and thus presents a wedge-shaped extremity to enter the tracheal opening. Or if there is any difficulty in passing it into the trachea, an outer bivalved collapsing tube may first be introduced, and then dilated by passing into it a second rigid canula; but of course this does not present so perfectly smooth a surface to the trachea as the ordinary tubes. A pair of curved dilating forceps, which can be hooked into the tracheal aperture and kept open with a spring, will often be of much assistance. It is said above, "the canula, if used"—for it deserves consideration whether it would not often be better not to use a canula. For much damage is often unavoidably done by ulceration from its pressure, especially in diphtheria, where there is probably a great disposition to ulceration from slight causes. There are three specimens in the Museum of the Hospital for Sick Children well illustrating this. I think, therefore, it would be worth while to try and dispense with the canula, at least where practicable, by adopting the plan of Professor Pancoast, *i. e.* cutting out a piece of the trachea, and hooking back the edges of the wound in the soft parts by pieces of wire fastened round the neck. Of two successful cases in which he did this, in one, a boy five years old, the opening closed on the twelth day from the operation; in the other, a girl of nineteen months, it closed on the eleventh day.* It has been objected that this would perhaps lead to contraction of the trachea where the piece is removed; but in neither of these cases did that take place, though one is spoken of eight months, and the other two months, after the operation. If a canula is used, however, it need hardly be said that the greatest care must be exercised in keeping it clear, and assisting the escape of mucus or membrane. Great relief is often given by instilling a drop of warm water into the trachea through the tube. Obstruction may be caused by a tough dry piece of mucus blocking up the trachea just below the tube; and I have frequently seen great distress relieved instantly by dropping a little water into the trachea, and thus softening the mucus and exciting cough, which may be assisted by plugging the orifice of the canula with the

* See Wood's *Practice of Medicine*, 5th ed. vol. i. p. 865.

finger just after an inspiration, then suddenly withdrawing it, when the piece of mucus will be expelled. For assisting the expulsion of mucus and keeping the tube clear, nothing is so convenient as an ordinary quill, which, from its resilience, is superior to any of the wire or other apparatus that have been devised. The patient should be kept in the tent-bed, in a moist atmosphere at about 70° Fahr. This much lessens the danger of bronchitis and pneumonia, and greatly assists expectoration. The food at first should be fluid, unless, from loss of sensibility of the epiglottis, the fluids run into the windpipe, in which case pultaceous food must be given and slowly sucked down; or it may be necessary, as in one case I have seen, to feed with the stomach-pump. The canula should be dispensed with as soon as possible. I have alluded to the mischief that may occur from its pressure; but besides this, the glottis may contract and lose its power from disuse, and it may become very difficult to reëstablish natural respiration.*

It is advisable, therefore, to remove the canula on the third or fourth day, or even before, and close the wound for a short time with sticking-plaster, and thus force some air through the larynx; and to do this every day several times, for an increasing length of time, until the child can bear the wound to be permanently closed, the surgeon being always, of course, at first prepared to insert the tube again at any moment, as is often necessary, especially at night. Good nursing is absolutely essential for the recovery of patients after tracheotomy; but than these cases, there are none in surgery which more repay care, attention, and perseverance.

J. WARRINGTON HAWARD.

* As in a case mentioned by Dr. West, op. cit. p. 402.

# XIII. THE SIGNIFICANCE OF SKIN-AFFECTIONS IN THE CLASSIFICATION OF DISEASE.

"Cette méthode vicieuse, puisée dans les écrits des médecins qui ont érigé l'anatomie pathologique en une science indépendante des maladies."—Broussais, *Examen*, c. xiv. s. 1.

It is with some hesitation and no little diffidence that I venture in this volume to enter upon the study of so great a question as the classification of disease.

I should have chosen not to take up in a fragmentary way a subject which, of all others, demands a breadth of treatment and a fulness of illustration which, were I capable of it, is certainly impossible in this place. I have been collecting materials,* and have continually thought upon the classification of disease, for several years; and I had hoped to lay my views before the profession with a completeness and an amplitude befitting the pretensions of the matter itself, if not of my own poor manner of treating it. Engagements of many kinds, to which I need do no more than slightly refer, have, however, prevented and hindered my achieving this; nor should

* It is at all times difficult, especially for desultory readers like myself, to describe honourably and accurately the sources of our knowledge and opinions. It is more than usually difficult in times of active advance, like the present time, of the medical art. There are, however, two distinguished physicians to whom my debt is too great to be forgotten. To the teaching of Dr. Jenner at the Hospital for Sick Children, and to that of M. Bazin at St. Louis, I owe my first distinct convictions of the supreme importance of the natural method of classification in medicine. Dr. Jenner applied this method with success to the study of rachitis, of scrofula, and of tuberculosis; M. Bazin exemplified it more especially in dealing with affections of the skin. Whilst I find some reason to dissent from both, and from M. Bazin more particularly, yet I think I see in both a largeness of conception combined with a rare faculty of clinical observation which is not often equalled in our profession.

I have presumed now to weary the reader with allusions to my purposes, had it not been to relieve myself beforehand of the charge of too lightly dealing with things of weight, and of setting forth irregularly and briefly opinions which have something of newness in them, and which are contrary to the observed habits of medical thought.

I believe I may without rashness affirm that all competent persons are thoroughly dissatisfied with our existing methods of classifying disease. It is felt that no progress whatever has been made in the correlation of diseased processes, or at any rate that such progress is too slight to be encouraging, is almost entirely confined to the syphilitic series, and bears no sort of proportion to the immense increase of our knowledge of morbid states.

The philosophic inquirer is not satisfied to know that a person is suffering, for example, from a cancer. He desires to know why he is so suffering—that is, what are the processes which necessarily precede or follow it.

He wishes to include this phenomenon, now isolated, in the series of which it must necessarily be but a member, to trace the period of which it must be but a phase. He believes that diseased processes have their evolution and the laws of it, as have other natural processes, and he believes that these are fixed and knowable. But he feels that no serious efforts are made to detect these laws. He feels that he and others are looking upon diseases as one ignorant of history would look upon a map. There are certain groups marked off by little pink lines and little blue lines, and duly designated by appropriate names in neat Roman capitals. But he does not know their real affinities; he does not know how far the little blue lines and the little pink lines coincide with natural distinctions, or are only the result of artifice. He is ignorant whether any two neighbouring groups have anything in common beside their neighbourhood, nor does he know whether the component parts of any one group are held together by an accidental bond or by a natural affinity. Yet all these and such considerations must be of the very first importance, even to a mere geographer, and to a politician indispensable.

May I then hope for a generous estimate of my deficiencies on the ground of the acknowledged need of my adven-

ture and of such as mine? My notions may be poor and bare, but they will fill a pit as well as better. Any ideas must be useful, if they do but aim at a classification of diseases, not according to a mere ledger arrangement, but in such a way as to express their mutual affinities, in such away, that is, as to point out not their place only, but also their origin, their history, and their future changes. Our present want—not of a complete classification, which as yet cannot be, but even of a tolerably true method—is bewildering our best students and repelling many from our schools. What can we think of methods which are content finally to set the variolous pustule by the side of acne or ecthyma; which magnify such an affection as eczema into a disease, the member of a series into the series itself; or which arrange together all eruptions found on the head; or which class under one head of "skin-diseases" affections belonging to a variety of groups, and having often nothing in common but their appearance upon the outer surface of the body? False classifications such as these do mischief, not only in asserting what is false, in declaring a kinship where no kinship exists, but also in drawing the mind away from the perception of real affinities. We are by them led to think of diseases as isolated disturbances in a healthy body, not as the phases of certain periods of bodily development. We begin to regard a sickly person not as one working out his own mode of growth, but as one full of little local mischiefs, as the chalk is full of flints. It is steadily forgotten that health is a diathesis as much as is scrofula or syphilis, and that each of these is a mode of growth. Some of these modes are more useful, others are less useful; but all tend, if unchecked, to pass through certain calculable cycles. That particular cycle which we call 'health' we prefer as being the most useful variety of the human plant, as it is the most varied and complex: for this reason we take it as a standard. But scrofula and syphilis and such other diatheses are likewise modes of human growth, whose phases may be calculable from birth, and which differ from health not by any superaddition of "morbid principles," but either (as in most cases) by the primary intention of the germ, or (as sometimes) by a deflection of growth at a subsequent stage.

It is as natural for a certain cloudy kind of corneal tissue to grow upon a body raised from a syphilitic germ, as for a certain other and clear kind to grow upon a body raised from a healthy germ; as natural as for a purple grape to grow upon a Hamburgh stock, and a white grape upon a Sweetwater.

I may briefly express the principles upon which I would argue in the following propositions:

1. That classification in the study of disease is not a technical system, but is the expression and the organ of our progress in investigation; to classify being to formulate the phenomena of natural evolution as we perceive them.

2. That life, as it falls under the eye of the physician, consists in a series of processes which together constitute modes of growth; and that these modes are many: *e.g.* scrofula, rheumatism, health, syphilis, tuberculosis, rickets, and so on.

3. That "morbid" states, taken severally—such as bronchitis, meningitis, lichen, eczema, heart-diseases, kidney-diseases, &c. &c.—are most frequently terms or members of such series; their serial connection being, however, often overlooked, and they themselves regarded as self-consistent disorders.

4. That these series are themselves again capable of comparison,* and, as in the case of scrofula and rheumatism, for instance, are often curiously related.

5. Classification by the natural method must be founded, therefore, on a perception of these serial relations, and on the natural affinities they reveal, and must be indeed the expression of them. An artificial system, on the other hand, will be based on separable attributes of size, locality, appearance, duration, &c., which cannot necessarily be distinctions of kind.

6. Finally, that the study of skin-affections is especially fitted for the working out of such a natural method as this, and is deserving of much attention.

* The genetic affinities of scrofula, rheumatism, &c. can scarcely be known until comparative nosology becomes a branch of science. I hope, however, some day to be able to treat of the gradual divergence and establishment of leading varieties of tissue-growth or diatheses. They must arise by differentiation from the simple tissue-disorders of the lowest forms of life, and must be worked out hand-in-hand with differentiations of structure.

I need not say that I shall be unable to discuss these propositions in detail, and that I have enumerated them rather to give the sum of my opinions on this matter of classification than for the purpose of their several explanation.

It is somewhat surprising to find how little the real meaning of classification is apprehended by medical writers. It is regarded, not as the order of nature itself formulated in accordance with our mental limitations, but as a mere convenience—a sort of pigeon-holing of our knowledge. Some writers on medicine say, on the threshold, that as all classifications are unsatisfactory, so they intend to avoid all, and to take things as they come. To assert that classifications, as they have been proposed, have been found afterwards to be transient or incomplete, is merely to state that our attainment of true conceptions is a gradual, a tentative, and, as yet, a very incomplete process. Authors appear to forget that it is impossible to speak at all without thereby classifying the subjects of speech; and that to classify loosely or falsely, because the best classifications we know are fallible, is, as it seems to me, both idle and unfair. It is to be careless of the pains of others, niggardly of our own. There are, of course, classifications which are formed for special purposes only, and not for the expression of scientific value. Such, for example, are classifications for the ends of particular trades, which are artificial arrangements, having no pretence to any other than a narrow and a temporary acceptation. We are in the habit, also, for casual purposes, of founding classifications upon properties selected only for their obviousness. No one dreams, for instance, of attaching any scientific meaning to an alphabetical classification, or to a classification of objects by their size, colour, or weight. Names given upon such obvious and separable characters do not connote anything beyond them, and do not lead to the perception of distinctions of kind. A scientific classification is the very opposite of this. It disregards the obvious, as such, and may place together objects at first sight distant and disparate. It regards characters which do signify distinctions of kind; that is, which not only declare themselves, but indicate also the coexistence of an infinite number of other differences, profoundly separating group from group. Now characters which imply these essen-

tial distinctions are mostly subtil rather than obvious. The existence of a placental fœtation is by no means an obvious characteristic of a hedgehog; but it is one which is found to coexist with, and is therefore taken to signify, an inexhaustible number of further differences which exist between a hedgehog and a non-placental mammal, such as a spiny anteater. Insectivorous habits and the possession of thorns, which are common and obvious characters of both hedgehogs and spiny anteaters, are not reasons for grouping them together, because they are not found to coexist with an inexhaustible number of other common properties. When we classify a disease, then, we do so, not to group together affections having a community of site or of aspect, not for easy reference, nor for the symmetry of a page or volume, but to express thereby the greatest possible number of facts concerning its relations with other diseases. The more natural a group, the more will its name tell us of the essential nature of any member of it, and the more closely will it keep us to the way of discovering unknown properties. To put up with an artificial group is not only to falsify, or at least to ignore, affinities already known, but also to draw the mind away from the only method of detecting more. In a word, the value of any classification, whether as an adequate expression of our knowledge or as an organ of its advancement, consists in its approximation to that order of nature which we desire to seek out.

As the office of nomenclature is most clearly learned in chemistry, so in biology is that of classification. Hence we must expect to find in pathology, which is one aspect of biology, that classification plays a most important part. We must expect to find phenomena arranged in groups of progressive subordination, beginning with the most general and ending with the most special. Before, however, we can really grasp the full meaning of the process called the classification of disease, before we can realise to ourselves that to classify is to express the orderly evolution of morbid actions, and is, in fact, efficiently to diagnose, we must thoroughly divest ourselves of all ontological conceptions of disease. Diseases are in rude societies looked upon as actual evil beings, as indwelling devils. They are afterwards regarded

as the peculiar manifestations of some supernatural beings or being, acting from without, as unusual forms of epidemic disease are still said to be by the vulgar and others. Then in the gradual refinement of crude conceptions the demon is attenuated, and the disease becomes an entity, an "influence," a "morbid principle," a "poison," a "virus," a what-not, superadded to the healthy organism. Lastly, and worst of all, it becomes a "type." There are some incurably mischievous words, which ought to be utterly abolished, ruthlessly proscribed, and relegated into oblivion. I could now make out a short expurgatory index of such offensive words, were this the time and the place to do so; and I should then recommend that heavy penalties be inflicted upon any wretched lexicographer who presumed to recall them. At the head of it I would place that insidiously evil word, "type," the four letters of which do more harm than the whole of the Calmuck language together, which latter is said, on an accumulation of evidence, to be the most abominable language now known to exist. Were the word "type" used in its due sense, no more should be meant than a generalisation from comparison of many individual forms. By comparing a large number of individuals of a group, and eliminating in detail what is special in each, we arrive at a general conception of the forms of that group, which conception we may express by a diagram. Such a "type" or diagram is not an architectonic design. It is, on the contrary, the result of analysis, the result of a comparison of existing forms. It has no reality of its own, still less can it have any power of determining form as a pattern determines it. Yet "types" are talked of as if they prescribed in some way the course of the creative shears, or furnished to us as it were a key to the plan of organisation.* Some, again, use the words "typical form" not to mean these diagrams of the results of our own generalisations, but to mean a good individual specimen of any group. That the same word

* Thus we assume that a camelopard and a pig have the same number of cervical vertebræ because it was necessary to perform a feat with some preconceived plan or "vertebrate type." I think it is Mr. Darwin who points out the absurdity of congratulating Providence on a faculty of dancing in chains.

should be thus used in two opposite meanings is but one more instance of the confusion of thought which it encourages. It is generally in the latter meaning that diseased "types" are talked of. A well-marked case of epilepsy, say, is taken and called a "typical case," and efforts are then made to square all other cases to the same design, regardless of the fact that Nature never makes two leaves on the same tree alike.* Instability of nervo-muscular tension may be seen in all degrees between the normal state and a complete epileptic fit. But an epileptic fit attended with loss of consciousness is the "type," and any unlucky affections which cannot come up to that standard are banished to a no-man's-land as meaningless and vexatious. If epilepsy once cease to be regarded as a self-consistent disease, having in the background a hazy sort of reality apart from the mere co-existence and succession of certain phenomena, then it will have to take its chance in a crowd of allied affections, and we shall reach a wholesome democracy of diseases. We shall then make a group embracing under some generic name all forms of muscular spasm, considered not as modifications of a "type," but as deviations from equilibrium, and we shall denote particular forms by specific names appended to one generic name. We should probably work on till we discovered that certain particular forms of muscular spasm do not occur interchangeably, but have definite kinships with other affections. The occurrence, for instance, of curious motor aberrations in members of scrofulous families deserves attention, and we may find that some such nervo-muscular disorders are to be classed with purulent degenerations of the cervical glands, with certain lupoid degenerations of the skin, with caries of the bones, with degeneration of lung-tissue, and with certain forms of lunacy. Another form of nervo-muscular disorder may be connected with gastralgia, with asthma, and with dartrous eruptions. A third form may be noted in connection with notched teeth, interstitial keratitis, necrosis of bone, gummy tumours, and so on. I have reason

* George Eliot speaks of "those who think that Nature has theatrical properties, and, with the considerate view of facilitating art and psychology (and nosology), 'makes up' her characters so that there may be no mistake about them." *Adam Bede*, vol. i. p. 17.

to believe that epileptoid disorders may be grouped in this fashion. However this may be, I am sure that as some families and individuals tend to grow along one line, and other families and individuals along other lines of evolution—lines which lead through tissue-changes, some of more and some of less utility—so we, by following out such lines or serial actions, have the only clue to the affinities of affections at first sight strange to each other, various in aspect, or distant in seat. I maintain that the existence of such a bond of genetic affinity, and not of mere obvious resemblance or of anatomical position, should be our test in classifying one affection with another. I shall now try to show that the study of skin-affections is especially fitted to help us in classification upon these principles.

Its fitness consists first in this, that the morbid process is worked out under our own eyes, so that instead of calling all active changes in the structure of the skin dermatitis, as we speak of bronchitis or enteritis, we are enabled to differentiate still farther and to name with far greater accuracy. Secondly, we find that four at least of the main diatheses—syphilis, scrofula, the arthritic diathesis, and the dartrous—are attended with structural changes in the skin of an unmistakable character. Thirdly, it is a general truth in zoology that although profound search must be made for distant structural affinities, yet it is especially from the external tegument that lesser variations are to be estimated. When we compare men with monkeys we compare their bony frames; when we compare men with men we are led by Professor Huxley to seek our distinctions, not in cranial peculiarities only, but also in those of the tegument, and to divide men into xanthochroi, melanochroi, and so on. Now what is true for the division of man into races is in great measure, I think, true for the distinction of human diathetic varieties. I need not remind the reader how good a guide is the complexion in distinguishing between well-marked examples of, say, the homo arthriticus, the homo tuberculosus, the homo scrofulosus,* or the homo syphiliticus. Still more is this to be seen when the skin breaks out into active change. No differences can be clearer than the differences between the morbid

* See Jenner, lectures on rickets, tuberculosis, scrofula, &c., *Med. Times.*

states of skin belonging to the arthritic, the dartrous, the scrofulous, and the syphilitic series respectively. In each case the skin-affections have an aspect of their own, an aspect in well-marked cases quite peculiar. We must learn by these superscriptions to give to scrofula that which is scrofulous, to syphilis that which is syphilitic, to arthritis or dartre that which is arthritic or dartrous.* A patient comes into the physician's consulting-room and complains of much suffering from hæmorrhoids. He comes another day and seeks to be relieved of a dry, dark-coloured, stinging eczema localised about the upper lip or whisker. He comes a third time tormented with a bronchitis. All these, he says, in turn are aggravated by the eating of a few raisins, or by indulgence in 1847 port-wine. Shall we not then class these three affections and others of the same series in one group, or shall we break up the series and send the eczema one way and the bronchitis another? Let us learn from syphilis and be wise. We do not dismember syphilis; in this instance only we follow an unreservedly natural method. We class the syphilitic bleb, not with chicken-pox, but with syphilitic papular and tubercular eruptions, and all these with syphilitic ulcerations of the throat and periostitis syphilitica. Allied as they apparently are, we should do very wrong to class necrosis syphilitica with caries scrofulosa; we put it with the afore-mentioned ulcers and periosteal affections, &c., and call it "specific," as if scrofulous caries were not "specific."

In syphilis then the supposed continuity of a "virus" has led to a rational or natural method of classifying the various affections of which it consists, the phases of its period.

Let us recognise the full significance of our dealings with syphilis, and proceed to investigate other affections on a like method.

The present is perhaps the right moment for saying that I am very far from casting an evil eye upon the classification of Willan. Willan's arrangement is a very great

* "We are at present at the ABC of dermatology, and must learn to read the skin. From many examples it clearly results that dermatology in the future may present important indications concerning diseases of internal organs." Hebra, reply to Address, *Medical Times and Gazette*, February 16, 1867.

constructive effort, and one which needs but little modification or addition as a description of *genera*. I continually teach in my demonstrations of skin-affections at the Leeds Infirmary in accordance with Willan's system; and I heartily thank Dr. Tilbury Fox and other physicians for supporting Willan against the inconsiderate and irrational attacks of French and German and even English physicians. Its fault is, not that it is bad, so far as it goes,—for it is so far admirable,—but that it is incomplete, and if used exclusively must tend to narrowness of view. As M. Bazin says, it erects that into a disease which is only an affection or a symptom. An eczema, for instance, is not a disease,—is not, that is, a morbid cycle in itself, an isolated and self-consistent morbid effort—but is a member of a series having terms preceding and succeeding.*

Nor is eczema a member of one series only, but is a genus containing several species, each of which has its place in its own series. Willan is, nevertheless, excellent as a classifier of lesions, and has done great service in pointing out the evolution of affections of the skin. Those who disintegrate Willan's genera would have us back into chaos. And needlessly so; for they all, even the great Hebra himself, mistake Willan's principle of naming. He did not mark his affections (as Hebra says), after their lesion of initiation, but after that which he considered to be their stage of maturity —a very different thing. This distinction is most important; for a spot of ecthyma, for instance, is at the outset an erythematous blotch, then a papule, then a pustule, then an ulcer, and finally a cicatrix. It was Willan's merit to distinguish mature and characteristic states from transient or occasional ones; and he would, I conceive, have been himself among the first to admit that eczema, for example, may have its stages of pityriasis, of psoriasis, or of lichen. To find fault with the name eczema, and to aim at such compound names as lichen-eczema, eczema-psoriasis, &c. is to ignore Willan's synthesis, or any other synthesis, altogether; and is,

* M. Bazin calls it one symptom of a "pathological unity,"—such as scrofula, &c., to which alone he could give the full title of disease (*maladie*). M. Bazin, however, too often betrays a tendency to realism in these parts of his discussions.

I venture therefore to think, one of the few errors of that able observer and reasoner, Mr. Hutchinson. I am thankful to say he does not inflict upon us such names as M. Devergie's "impetigo ecthymatiforme," "herpes psoriasiforme," &c. because he says "he has not to do with a lichen-like eczema," for instance, but with "a real (!) lichen and a real (!) eczema occurring together."* What can an unreal lichen be, or an unreal eczema? Other writers talk of "an eczema modified by its occurrence in arthritic persons," and so on—our old friend, the "typical eczema" being, I presume, something apart from the mere phenomena by which it reveals itself.

Lichen, again, is surely not a morbid entity, capable of sundry and divers "avatars;" nor, on the other hand, is it merely a fine name for papules, or for any kind of papular affection. It is, as I accept it, a name given to a particular morbid process, in which papules form the most prominent feature at its time of maturity. To return to elementary lesions as separate disorders is profoundly to misconceive Willan's synthesis, and to land us again in anarchy. Every close observer of skin-affections must be dissatisfied with Willanism as a final arrangement; but in order usefully to enlarge his views he must realise to himself the functions and methods of classification. If he does not realise these, he endeavours to attain a higher generalisation only by permitting himself to be vague. To observe phenomena closely in their separate aspects is not enough; they must be classed in groups of progressive subordination. Thus we find, first of all, that the skin breaks up into certain tolerably definite lesions. Our first and evident generalisation, therefore, is to group these lesions into families, such as blotches, vesicles, papules, ulcers, scales, and so on. Our next conclusion is, that by watching the evolution of these lesions we are able to describe them as following one another, or coexisting in certain definite relations to each other. Thus I beg humbly to think with Willan that, although in certain forms of eczema both scales, papules, and ulcers also do constantly follow or coexist with vesicles, yet we find a certain order in their relations which is not the order of lichen or psoriasis. We are justified, therefore, in making another constructive effort, and in call-

* See *Journ. of Cutaneous Medicine*, No. I. p. 86.

ing all eruptions following such order by one generic name. M. Hardy and Mr. Hutchinson do not give Willan the credit he deserves of detecting by laborious study the order of anatomical evolution in various modes of diseased skin. Though Willan never got beyond the anatomical stage, he was far beyond the stage of calling all papular appearances lichen, or all scaly appearances pityriasis and psoriasis.

We are thus far, then, in our efforts of constructive grouping:

1. We have classed in families and named our elementary lesions, such as ulcers, vesicles, &c.; though, of course, each family contains many varieties.

2. We have noted their varying relations to each other, and we have made groups in accordance with observed modes of such variations—eczema, lichen, psoriasis, &c. There remain yet two efforts of synthesis to be made.

3. To ascertain whether these affections have a place in the evolution of general maladies; and if so, what places, and what specific names they are to receive in accordance therewith.*

4. Last, and also least, we have to note varieties.

I will take a case from my note-book to illustrate these directions of thought—a case of that common affection, eczema.

A. B., æt. 63, whose father suffered from gout and died of effusion of blood into the brain, presents himself with a large eczematous patch upon the outer side of the calf of the left leg. He says that the patch sometimes disappears, but it always returns in the same place, and on each reappearance it exudes a little clear fluid. When the affection of the leg recedes he often suffers from bronchitis. During adult life has been liable to acid eructations and to turbidity of urine, also for many years to piles. He is liable also to dizziness in the head, to low spirits, and to intercostal neuralgia. Never had a frank attack of gout. There are nodules in the edge of the ear, the arteries are a little rigid to the touch, and the

* I need hardly say that I do not consider these generic and specific groups to be groups of equivalent value with the genera and species of animals. I believe, however, that the method of arranging the latter must be the method of the former.

second sound of the heart is a little too clear and hard. The urine is generally of low specific gravity and contains traces of albumen. On examining the eczema, we find not a pink, creeping, sweating, and itching patch, but a claret-coloured, fixed, dry, and stinging one. There are now no vesicles, but a few papules and considerable desquamation. There is little itching, but much smarting. There is no symmetrical patch on the other limb. To follow the order of thought stated above, we: 1. Name the lesions; a simple matter in this case. 2. We know by the look of the patch and by inquiry that it is the chronic stage of a once active process, which active process at its *phase of greatest activity* was marked by vesicles on an inflamed surface; this form of eczema having a very brief period of culmination and a very prolonged period of subsequent chronicity. This subsequent period is often marked by squamo-papular elements. Such an anatomical development I call eczema, after Willan. 3. We have to go a step farther, and ask whether the connection of this eczema with the other affections in this person and his family is an accidental or an essential connection. Now eczematous affections occur in the course of the scrofulous series, of the arthritic, of the dartrous, and also from the effects of certain parasites, certain irritants, &c. Can we by any peculiar features recognise specific differences among these eczemas of various origin? I think we can. When the scrofulous skin gives way in eczematous modes, it is rather on the upper than on the lower parts of the body; it does not sting much; it does not go and come in one spot, but spreads rather rapidly, it generally comes and goes once for all; and it does not occur in adult life. It does not dry up and form scales, but secretes a sero-purulent fluid which tends to form crusts. The dartrous person again is very liable to eczemas, among other degenerations of the skin. But in them the eczematous form of morbid evolution differs widely from either of the preceding. It tends to spread rapidly and also symmetrically on both sides of the body; it is seldom complicated with papules, though it often is with superficial ulcers and with scales. It is of a pink, not a claret colour; it runs freely with a clear exudation, which does not form honey-crusts. It may smart a little, but generally itches. It has

no tendency to recur in a circumscribed spot, but it generally prefers the inner aspect of the limbs.* I will not proceed to point out the peculiarities of syphilitic eczema, as these are said to be well known. I conclude then that I have to deal with a particular species of a widely-distributed genus, a species found in persons of arthritic antecedents, and who may or may not present other arthritic affections also. Once more we have in the illustrative case: 1. An eruption presenting lesions of the families squamæ and papulæ. 2. Which had erythematous and vesicular antecedents, and which presented vesicular lesions at the period of its culmination; an eruption therefore of the genus eczema. 3. An eruption presenting specific peculiarities, such as we find in eczemas which are a part of the arthritic mode of tissue-growth, and which happens at present to coexist with other symptoms of the arthritic diathesis; an eczema therefore of the species E. arthriticum. 4. It presented lesser differences, which distinguished it as a *Variety;* differences which need not now interest us.

Such, then, is the method which I conceive to be the only true one of classifying an affection of any organ; and I have tried to show that skin-affections have much significance for us in our search after a true method.

I submit, that by naming the above affection eczema arthriticum I signify thereby distinctions of a most important kind. By Willan's name a separation is made of these particular modes of eruption from other modes. By addition of the specific name "arthriticum," we obtain a special knowledge of the affinities of this form of eczema; affinities which separate it from other specific forms, and which ally it with a number of other affections—affections widely apart from it, perhaps, in the attributes of place or appearance. We know, moreover, at once, that we have to treat this eczema as we have to treat all other disorders of the arthritic series. But what do we learn from the usual insufficient designation "eczema," alone in the cold, or with perhaps a mere pictorial

* The great opportunities of seeing skin-affections at St. Louis have enabled me thus to treat of them. Nor can I forbear to say again how much I owe to the direction of M. Bazin, and, I must add, of M. Hardy also.

adjective? We learn nothing of the nature of the affection, of its relations with general morbid cycles; we learn only the anatomical development of a single symptom. We are thereby led to suppose that a certain anatomical change is not a phase in many maladies, but is in itself a disease owning but one kind of origin throughout its many diversities of appearance. The next process, of course, is to tack on a remedy to the supposed disease. Arsenic, which has specific powers over the dartrous diathesis in general, and over the skin-manifestations of that diathesis in particular, is elevated to the dignity of curing all kinds of skin-affections. If the nature be one, the remedy must also be one. The result is that arsenic is given continually in arthritic and scrofulous skin-affections with no effect beyond the injury of the patient and the discredit of the medicine. If any given skin-affection be of scrofulous genesis, it must be treated by cod-oil and iodine; if arthritic, by an anti-arthritic diet and medication, and appropriate baths. In "Donovan's solution," indeed, we have indiscriminate drugging raised to a system. By the simultaneous exhibition of arsenic, mercury, and iodine, we are prepared to bring down any game. Instead of putting our No. 2 shot in one barrel, and our No. 6 in another, we mix them together, and whether scrofula, syphilis, or dartre come uppermost, we are ready for them all. Could not a formula be invented which should contain colchicum also? What a popularity it would attain! Seriously, can we marvel that "skin-diseases" are called obstinate, when we thus shut our eyes to their genetic affinities? The obstinacy surely is with us. Can we marvel that writers on "skin-diseases" (skin-affections, or skin-symptomatology, it should be) are beating about in the hope of reaching some better mind? Can we marvel that, if they wander without method, they wander abroad?

> "Where lawe failleth, errour groweth:
> He is not wise who that ne troweth."*

Can we marvel that a *blasé* reviewer is driven to cry out, in the bitterness of his heart, that all classifications, like "all taps, is wanities"?—so that he positively congratulates Mr.

* Gower, *Confess. Amant.* Prologue.

Nayler* on the absence of a new classification from his recent work. Whether he means that we have already attained to a perfect classification; or whether he means that while the attainment of new conceptions of diseased relations is good, the methodic expression of them is fastidious; or whether, again, that all classifications are but displays of superficial ingenuity; or, finally, that new conceptions and their formulation are alike wearisome to any but the inventor,—I have no opportunity of judging. The objections made to any attempts at a better classification are indeed manifold. Some writers are so satisfied with the Willanean system, that they refuse to go farther lest they fare worse. I have given my opinion of the value of that system. Others say that, although the Willanean system is imperfect, yet to change it is pedantic —as pedantic as it is to spell after the Landorian fashion. To change our spelling is to alter a historical monument. Were it our aim to make a perfect language, many alterations now fastidious would then be necessary.

It is objected, again, that to interfere with the established classifications might lead to indefinite change, and would unsettle the minds of students. This argument, which would be most becoming in a bishop, I find unbecoming in a scientific physician. We might as well determine to sit for ever in the same place for fear of unsettling our legs. What are minds made for except to be unsettled? If a new classification express a truer way of observing the facts, it will live and grow; if it be but a more or less ingenious deviation from the common order of thought, it will not survive to vex us. Our consciences are insufficiently sensitive on this matter. Let us realise the fact that to name wrongly any phenomenon or series of phenomena, is not only to reiterate false assertions about them, but is also to hoodwink ourselves in regard of the truth, which is but a system of affirmative propositions. A name in itself is nothing. A favus by any other name would smell as sweet. Having ticketed an affection, however, to ticket in the same way another and a different affection, is to disguise their real affinities. It is not an excuse to say that no one is deceived. To assert continually a community of character where no such community exists, must be a gross or a

* *Med. Times and Gazette*, May 4, 1867.

subtle means of deception. The mistake may originally have been made by infirmity of understanding; but to perpetuate it wilfully is an "enormity of the will," and deserves not pity only but indignation also. Such intellectual sloth should have no peace. Let us no longer, then, look upon classification of disease as a mere artifice or a mere index, and let us incessantly strive after a natural method. This, even in an imperfect state, may be an important system of true conceptions of the relations of phenomena and of groups of phenomena; and it may be a most powerful rational instrument of their ulterior perfection. I sincerely trust that such views of classification are gaining ground; and, in conclusion, I may quote the following remarks from an able article in the *Lancet* of March the 2d, 1867: "Perhaps the most important lesson to be extracted from the returns of the Registrar-General, viewed in the light of medical science, imperfect as they are, is the fact that we are killed not so much by disease as by diathesis. . . . One principal fault of the nosology of the Registrar-General is, that it almost ignores diathesis. . . . If we are right, 'local diseases,' which now figure most largely as causes of death, will have to be considered subordinately to or in connection with indications of the diseased states which largely condition their fatality. It has the fault of all detailed [technical?] classifications, that of separating sharply and artificially things which are clearly related to each other. At the same time, we cannot hope for much improvement of the classification. This introduction of statements respecting diathesis is evidently delicate and difficult." So, as nature is coy and difficult, we must make no serious effort to change a classification which is as coarse and as plain as a teaboard.

T. CLIFFORD ALLBUTT, M.D.

# XIV. CASES OF FEVER:

## WITH REMARKS ON THEIR ORIGIN.

CASE I.—In 1859, a pallid schoolgirl, æt. 11, of strumous diathesis, living in a dirty tenement in a large town, was attacked with feebly-marked typhoïd, ending in recovery after seventeen days.

CASE II.—Eighteen months later, a thin, dark-complexioned man, æt. 22, living in the same house, fell ill with typhoïd. In about sixteen days the typhoïd symptoms disappeared, and the case took on the characters of typhus mitior.* The patient's strength now rapidly failed, notwithstanding the liberal exhibition of nutriment, with wine, quinine, ether, &c. The pulse, previously small, became filled out under this treatment, but possessed no power; the tongue got brown and dry; and a low muttering delirium set in. The condition daily became worse, and it seemed as if the patient must sink unless new means were employed. Considering that no improvement had accompanied the filling-out of the pulse, and that the beats, though large, and indicating a sufficient *quantity* of blood in the body, constantly conveyed the impression of want of nervous power, which want appeared to increase, I sought for some tonic which, instead of assisting to make blood, should directly augment the nervous force. I therefore prescribed five minims of the tincture of nux vomica every few hours, and next day found rather less delirium, and some slight moisture about the edges of the tongue. The day after, the delirium was gone, the patient looked and felt more life-like, and some accession of force was noticeable in the pulse. Marked improvement continued; when about the fourth day of the nux vomica a new kind of delirium began. The face was clear, the eyes bright, the senses quick, the tongue clean, the pulse good and lively, yet the patient was too weak to raise himself in bed, and lay vivaciously chattering a mixture of sense and nonsense, all his ideas being remarkably joyous. I at once reduced the dose of nux vomica to one-half; and the next day he was rational. The day after, it was withdrawn altogether; and the man soon recovered under some ordinary tonic, having been ill from first to last eight weeks. The inmates of this house procured their drinking-water from a shallow well, very near the cesspool of a privy common to seven houses; smell from cesspool very bad; smell also from dust-hole.

* Like Dr. Bennett's case 233, of "Typhoïd succeeded by typhus fever," *Clin. Med.* p. 937.

CASE III.—A thin, dark-complexioned schoolboy, living in a dirty house next to a slaughterhouse, from which a bad smell often came, was attacked with miliary fever during very hot weather. He recovered after eight days' illness.

CASE IV.—Twenty months afterwards, in the same house, febricula, from exhaustion following over-exertion, occurred in the mother of the family, a stout, well-fed woman. She recovered in three days with rest and nourishment. The offensive smells were still noticed.

This family had now inhabited the house for seven years, during which time they had constant illness of one kind or other, having previously been healthy people. The ceilings and walls were brown with dirt. Drainage imperfect, with nothing to stop the sewage exhalations from getting into the house. A manure-heap before the windows. Sitting-room an underground kitchen with damp walls.

CASE V.—Febricula in a coarse healthy-looking woman, living in a dirty court. Recovered in three days.

CASE VI.—Typhoïd fever in a schoolboy, æt. 8, living in the same house. Recovered with difficulty in six weeks, having been dangerously ill. This court was always strewed with offensive rubbish and filth. Drinking-water derived from a water-butt. About this time a little girl in the same house died of meningitis, after a very short illness.

CASE VII.—Fever. On the 11th of November 1861 I was sent for to see a girl, æt. 5, who had been ill two days. The parents said a servant had just before died in the house of "fever." I found the child with pyrexia, debility, rapid pulse, loss of appetite, and great nervous irritability. No gastric or remittent symptoms. Much costiveness. After four days of treatment with salines and purgatives, bark was given. The symptoms yielded very slowly, not disappearing till the fourteenth day. Subsequent recovery took place tardily, under the use of iron and good food.

On the 19th of December two more cases of fever occurred in the same house. Noticing this, and remembering the reluctant manner in which the little girl's illness had yielded to remedies, and the report of the previous death of a servant from fever, I inquired into drainage, water-supply, and neighbouring nuisances. They assured me there was nothing wrong. The house was new, spacious, and clean, and the locality open and airy. Inspection, however, discovered two untrapped sink-holes in the back kitchen, close to the common living-room of the family, and up these sink-holes the exhalations of the drainage must constantly have been ascending. The holes were ordered to be immediately trapped.

CASE VIII.—One of the two cases was that of the father of the little girl just mentioned. He was attacked with typhoïd fever, which lasted about fifteen days, but was never very severe. His occupa-

tions took him away from home for some hours daily. He was thin, weak, and phthisical.

CASE IX.—The other case was that of a young unmarried woman, stout, and of healthy appearance, working as a dressmaker in the house. She was dangerously ill with typhoïd fever for twelve or thirteen days, requiring frequent change of treatment to meet urgent symptoms. The griping diarrhœa was relieved by tannin and Dover's powder; and quinine was given as it could be borne. Recovery was retarded by a severe attack of phlegmasia dolens of the left leg.

CASE X.—About the same time an infant in the house fell ill with fever and thrush, recovering slowly.

CASE XI.—On the 22d of December the mistress of the family sickened. Further inquiry as to the state of the house was now made, and it was found that the drinking-water had a foul taste, the cistern having never been cleaned out. At my request, they had this done immediately.

The symptoms in the case were those of typhoïd, which lasted for a month. The patient was severely ill. There were griping pains, urgent diarrhœa, and delirium, for many days, with dry brown tongue, rapid pulse, and exceeding depression. Some congestion of the lungs also occurred. Quinine or bark were given at intervals, with ample nourishment, and wine, which last had been but sparingly allowed in the other cases. The tannin and Dover's powder proved extremely useful in relieving the griping diarrhœa. Convalescence was not tedious.

No more cases of fever occurred in this house; nor was the fever imparted to any of the numerous friends who were constantly coming and going, and who helped to nurse the sick for a few hours only at a time. There was no sign of the disease being communicated from person to person. The occurrence of so many cases in one house rather pointed to a common cause acting on all the inmates; and such cause seemed to be discovered in the open sink-holes admitting malaria, and in the foul drinking-water.

CASES XII., XIII., and XIV.—In October 1860, after a peculiarly wet summer, three children of one family were attacked with remittent fever of malarious type.* A careful inspection of the house and premises was immediately made, but no possible cause was detected, beyond a patch of damp in the wall of the children's bedroom. The fever lasted about a fortnight, after which two of the children recovered, but the third was attacked with pneumonia. At the same time, the baby, previously well, sickened with asthenic pneumonia. Both recovered with difficulty. Here, then, were three cases of remittent fever and two of low pneumonia in one house. A month after their

* The malarioïd remittent of Dr. Handfield Jones. See *Brit. Med. Jour.* July 31, 1858.

recovery, it was found that there was a collection of water under the floor of the sitting-rooms, even touching the boards. Hence must have arisen the malarious emanations causing these illnesses.

CASE XV.—November 9th, 1863, a little girl in the same house was attacked with severe gastric fever. Sharp pain in the regions of the liver and kidneys marked the onset of the disorder, and almost constant sickness for the first six days. Recovery took place about the twelfth day.

CASE XVI.—On the 11th of November another sister fell ill with gastric fever, accompanied by sickness and delirium. She recovered about the tenth day.

CASE XVII.—On the 16th of November a third sister was attacked, but less severely. She recovered in six days.

In these cases the distress of the little patients was considerable. The boys, who were less in the house, were not this time ill, nor were any grown-up people. This outbreak of fever occurred, like the first, after rainy weather. The drinking-water was supplied by pipes from a good source, but the cistern was not examined.

CASE XVIII.—Typhus mitior in a boy, æt. 12, living in a dirty crowded room, and with every aspect of chronic starvation. Recovered with tonics and nourishment in twenty days.

CASE XIX.—An elderly lady died of fever in a gentleman's house in a small town. Many years before, a young lady had died of fever in the same house. Soon after the last death the house underwent a thorough examination and repair. The walls of the rooms were found to be covered with old papers, four or five deep, one over the other. These were stripped off and the walls cleansed. The cellar floor, being wet, was drained. A town-sewer was discovered sending forth a great stench into the back-yard, through an open grating near the scullery-door. The grating was removed and a bell-trap substituted. Two cesspools were emptied and done away with. The pipes connecting the water-closet with the sewer were found to leak, allowing night-soil to taint the rain-water tank. This was rectified, and the tank emptied and cleansed. The house was also completely ventilated.

Two months afterwards a servant maid, who had been weak and ailing for some weeks, fell ill with typhus mitior, which lasted fourteen days. Two precisely similar cases occurred in the immediate neighbourhood at the same time.

On further examination of the house, a rat-hole communicating with the sewer was discovered opening beneath the dining-room floor, and another was found close to the kitchen. Bad smells in both situations had been noticed. On the holes being stopped, no more illness occurred.

CASE XX.—Typhus in the puerperal state. Mrs. T., æt. 30, thin and delicate, four days after childbirth, her labour having been easy

and natural, was attacked with rigors, feeble rapid pulse, loss of appetite, and other symptoms of typhus mitior. No swelling or pain whatever of the abdomen; no mammary or uterine symptoms; lochia natural; and no morbid condition anywhere discoverable to account for this disturbance of the system. For some days the same state continued; she became weaker in spite of nourishment; the nights were sleepless; and exhaustion from this cause could only be prevented by a full dose of opium with quinine at bedtime. One day, a door at the foot of the stairs leading to her bedroom being open, I saw close to it a large untrapped sink-hole. On inquiry, it proved that all the waste water of the house went down there, that it led into a cesspool, and that bad smells often came up from it into the house. I begged them to have it trapped, and, until the trap was procured, to keep the hole always closely covered with a folded wet cloth. Next day the patient was for the first time slightly improved; and from this date recovery slowly took place. The fever lasted about sixteen days. Care was taken to see that the sink-hole was kept closed. Convalescence was slow; and the patient remained weak for some time.

CASES XXI. and XXII.—In a house near Shooter's-hill, a woman-servant was attacked with remittent fever, on the 3d of February 1858, during a rapid thaw. On the 5th she seemed recovering. On the 6th she was again attacked, and continued ill until the 10th (or 7th day), when an improvement took place. On the 12th of February (or 9th day) she was convalescent. About ten weeks afterwards a man-servant in the same house was attacked similarly, but more severely. His illness lasted ten or twelve days, leaving much debility. On the 8th of May he was sent into the country for change of air, and returned much improved on the 21st. On the 3d of June, the weather being very hot, he was again attacked with fever, which lasted forty-eight hours. After this, recovery proceeded without further interruption. The drainage of this house was not good. The drinking-water was procured from a well, ten or twelve yards from which were two large cesspools in a porous subsoil. The house was about 2½ miles in a straight line from the Plumstead-marshes, from which, as also from other marsh land on both shores of the Thames, miasmata might be supposed to extend so far. Dr. Peacock (writing in the *Med. Times and Gaz.*, March 21, 1857) remarked on the prevalence of remittent fevers in and about London during the then past autumn and winter.

CASE XXIII.—A young woman, thin and delicate, living in a crowded part of a large town, was attacked with typhoïd fever, which ran a mild course, passing off in ten days. Her father was just dead in the same house, said to be from "typhus." The house had a very small back-yard, with open privy, and sink-hole with the bell-trap studiously placed on one side. They said they always kept it so. The walls looked foul. The yard abutted on six or seven similar yards belonging to adjoining houses, each with its open privy and cesspool. Seven weeks afterwards a young man in the house was attacked with

mild diphtheria. At the same time a fatal case of diphtheria occurred in an opposite house, which was very dirty, the living-room overcrowded, and where a fœtid smell from an open cesspool had free entry at the back-door.

CASE XXIV.—Eight weeks after the occurrence of case xxiii., the last patient's aunt, living in the house next door, sickened with typhus mitior. The disorder was accompanied with much facial neuralgia. She recovered in ten or twelve days. She lived in one room over a gateway; and the stairs leading up to it were over a closet used as a dust-hole, so that the emanations from the putrefying refuse could ooze through the chinks of the staircase and ascend to her room, as she sometimes could smell. Shortly after, a severe case of diphtheria occurred in a house next door to this, where was an offensive privy in the little back-yard, running into a covered cesspool into which two other privies were also discharged, an untrapped sink-hole close to the back-door leading directly into this cesspool; in the scullery a wall damp with the exudations from a leaky soil-pipe passing down outside; and in the adjoining yard offensive heaps of fish-offal. Thus, in this small space, not twenty yards across, but well manured for the purpose, a crop of three cases of fever and three of diphtheria sprang up within five months.

CASE XXV.—Typhoïd fever in a man æt. 30, who had come to his home from London with the disease. Much abdominal pain and tenderness, diarrhœa, and delirium. Treated with 5 gr. of pulv. kino comp. every few hours, ammonia, and plenty of nourishment. Patient a teetotaller for some years past. Obliged him to have a quarter of a pint of porter twice daily. Convalescent after three weeks' illness.

CASES XXVI. and XXVII.—A boy, æt. 14, was taken ill with typhus while at school; and after many days' dangerous illness, accompanied with much headache, cerebral congestion, and active delirium, recovered with difficulty. A young lady living in the house, who visited him in the beginning of his illness, fell ill with typhus and died. Two or three boys were attacked in a slighter degree. The time of year was February. The house stood on flat ground close to the sea, exposed on all sides to the sun and wind; the subsoil was stiff clay; and adjoining the house were cesspools, from which emanations could freely enter.

The same boy was again attacked with fever at the age of 18. He was now a pupil in a hospital, in a healthy county town. During the summer he bathed in the river almost daily, staying too long in the water from love of swimming and diving; he was also over-working himself at his medical studies and duties, curtailing his hours of sleep to attend to them; and towards the end of the summer he had totally abstained from strong drinks for two or three months. In September a case of typhus with maculæ was taken into the physician's wards;

and shortly afterwards a second. These cases excited interest, and were visited frequently. In eight or ten days the house-surgeon and the pupil were attacked with typhus; also the hospital porter, and several patients. The house-surgeon, the porter, and some of the patients died. The pupil recovered after eight days' severe illness.

On the drainage of this hospital being examined, several large and full cesspools were discovered about the foundations of the house, the coverings of them being defective, so that their exhalations had ingress to the dispensary and other parts of the basement story.

The same pupil, at the age of 21, had an attack of febricula, brought on by over-fatigue during a walking tour, and by costiveness. Rest and clearance of the bowels were followed by recovery after forty-eight hours' illness.

Of the whole number of cases thus enumerated, 6 are set down as remittent or gastric fever, occurring in children (viz. xii., xiii., xiv., xv., xvi., xvii.); 2 (xxi. and xxii.) as true remittent; 8 as typhoïd (i., ii., vi., viii., ix., xi., xxiii., xxv.); 4 as typhus mitior (xviii., xix., xx., xxiv.); 2 as typhus gravior (xxvi. and xxvii.); 3 as febricula (iv., v., and the case supplementary to xxvii.); 1 as miliary fever (iii.); and 2 (vii. and x.) without any characteristic specified, though they occurred in the same house with cases of typhoïd.

The connection between many of the cases will be observed. Case i., typhoïd, was followed eighteen months after by case ii., typhoïd, in the same house; case iii., miliary fever, was followed twenty months afterwards by case iv., febricula, in the same dirty house; case v., febricula, occurred in the same house with case vi., typhoïd; case vii. succeeded a death from fever in the house, and was itself directly followed by three cases of typhoïd (viii., ix., and xi.) and by case x., fever, thus forming a complete family epidemic; cases xii., xiii., and xiv., malarioïd remittent, in one house and family, were accompanied by two cases of asthenic pneumonia, and were succeeded, twelve months afterwards, by cases xv., xvi., and xvii., gastric fever, in the same household. Here was not only a continuously unwholesome state of residence, but also probably feeble health in these children, either inherited, or acquired by unwholesome modes of living. Case xix., typhus mitior, succeeded two deaths from fever in the same house some years previously, before the drainage was put to rights; cases xxi. and xxii., remittent, followed each other in one

house; case xxiii., typhoïd, came after a death from fever in the house, was succeeded in the house by a case of diphtheria, by a second fatal case of the same close by, also by a third case next door, and by case xxiv., typhus mitior, in the house adjoining; and case xxvi., typhus, was directly succeeded by a death from typhus in the same house, besides a few milder cases; and this same patient was afterwards the subject of fever, case xxvii., in a hospital where numerous cases and some deaths from typhus took place, and again, at a subsequent period, had febricula. Here we note a personal proclivity to fever, rendering the patient a sufferer more than once—a thing occasionally observed.* Communication of fever from person to person took place only in connection with cases xxvi. and xxvii., the type being typhus. In none of the typhoïd cases was infection noticed. The chief connection between the cases is the occurrence of two or more in the same house in succession. This clearly points to a local cause of fever—a cause often persistent for months or years together, and depending on some defective sanitary condition about the house.

The three cases of febricula were consequent on over-exertion and fatigue in persons well nourished, but in the way of malaria. Excessive fatigue alone will not produce febricula. I conclude that the over-exertion caused a temporary depression only, bringing the persons slightly under malarious influence; and that their constitutions, not being lowered by privations, only needed rest, nourishment, and medicines, to obviate costiveness or other urgent conditions, to get rid of the fever. In the four cases of typhus mitior, there was no history of over-exertion, but in one (xviii.) the patient appeared ill-fed. In case xx. the nutrition had been impaired by feeble health. Cases xix. and xxiv. also occurred in weak persons. These are all conditions of *lasting* depression, not nearly so soon removed by rest, food, and remedies; consequently the patient is acted on by any surrounding malaria more powerfully and for a longer time. In febricula I see a transient image, and in typhus mitior a mitigated type, of typhus gravior, putrid fever, jail or ship

* For instances, see *Ed. Med. Jour.* Jan. 1858; also Dr. Hughes Bennett's *Pract. Med.*, cases 216 and 217.

fever, &c., the putrid form being superinduced by a deeper exhaustion* and a more potent and concentrated poison. Thus, clinical observation details to us as the factors of the typhus group of fevers—1st, exhaustion: the system being so lowered as to be influenced by malaria; temporary exhaustion producing temporary fevers, more continued exhaustion (or debility) producing more lasting fevers; famine, grief, debauchery, or over-fatigue being common depressing causes. 2dly, blood-poisoning by malaria; for exhaustion without malaria produces no fever. Such blood-poisoning implies the presence of malaria in the blood, in quantity sufficient to affect the quality of the large mass of this fluid in the body; and not merely in a state of passage through, as in nightmen emptying cesspools, in butchers at their slaughter-houses, in labourers clearing dungpits, in medical students dissecting or making post-mortem examinations, or in those employed in bone-boiling, candle-making, or any other fœtid occupation, in all which instances the emanations are eliminated almost as fast as they are absorbed; but it implies also some retention of malarious matter—retention either from want of eliminating power, or, as I have seen, from the eliminating power of the skin being checked—as by frequent cold bathing with imperfect reaction, or by a sudden access of cold weather, or by wearing wet clothes, or by want of common ablution, the skin having been allowed to become coated with a varnish of dirt—the whole fever-producing action being especially heightened by overcrowding. Finally, blood-poisoning by malaria does not make fever by itself, for we often see it without any fever following; but it is *malarious blood-poisoning coincident with depression and faulty elimination*, that originates fever of the typhus group.

With regard to typhoid fevers, the preceding cases furnish 8 examples, none of which showed any sign of insufficient nourishment; on the contrary, 3 of the cases occurred in well-fed people, but in 5 some weakness from other causes could be traced. In 7 cases out of the 8 there was known exposure to malaria; the eighth had come from a distance. In 6 cases

* "It must be a very considerable *depth* of destitution which is required to produce true famine-fevers." Rankin's *Retrospect*, vol. xxxvii. p. 281.

out of the 8 the drinking-water was ascertained to be bad; in the other 2 its state was not known. This looks as if typhoïd fevers originated in the concurrence of—1st, some personal debility, but not that of starvation; 2d, blood-poisoning by malaria—this implying all that was said above under the same head; and 3d, something injurious conveyed (often in water) into the intestinal mucous tract. I do not see how any other inference can be drawn from the cases.

The two examples of remittent fever (xxi. and xxii.) occurred in servants, inhabiting chiefly the basement story of the house, and therefore exposed to any malaria coming up through the sink-holes by carelessness in leaving out bell-traps. The other inmates of that house, who lived upstairs away from the sink, and who drank only filtered water, escaped illness. It was possible, though not ascertained, that both the sick servants might have drank unfiltered water.

W. E. C. NOURSE.

## XV. THE FORMS OF PNEUMONIA.

In framing the statistical table of the Medical Registrar's Report for 1865, I was struck by the very slender bonds which held together under a common name affections of the most various kinds. This is especially the case with regard to pneumonia—a term which is made to comprehend diseases which in their nature and history are altogether opposite. The question occurred whether it might not be possible, by bringing together a large number of such cases, to effect some natural arrangement of the whole into groups, each of which should comprise instances of disease more or less obviously allied to one another. To test this point in the only practical way, it was necessary to review all the cases described as pneumonia in our hospital records. The result is epitomised in the accompanying tables, which show very remarkably how pathological conditions, sufficiently similar to warrant the application of a common name to the series, are associated with every variety of clinical phenomena. Before alluding further to these tables, it may be well to refer shortly to the views of writers on the subject of pneumonia and its modifications.

A modern author has sought to bring diseases within the limits of terse, dogmatic description, heading his subjects with a short definition after the manner of the exact sciences. The definition of pneumonia is as follows: "A disease expressed by severe febrile symptoms, which come on suddenly, attaining in a few hours a great intensity, and which undergo a no less sudden abatement or improvement between the fifth and tenth day." We read subsequently of its well-marked stages, of their pathological significance, and of the sounds belonging to each. The affection is described throughout with an unusual precision; it enters upon various phases in

a prescribed order, and each step in its course has its appropriate physical sign, the significance of which can be nicely appreciated. By one writer, indeed, the history of the disease has been sketched out in a programme of parallel columns, the sounds of each period being described alongside of the supposed morbid conditions which account for them. It would thus appear, at first sight, that in a given case the physician would not only recognise the stage the disease had reached, but be able further to give some account of its antecedent phenomena, and to forecast with confidence something of its subsequent history.

But we are next told that, although this is pneumonia, that pneumonia is not always of this form; that inflammation is wont to attack the lung insidiously and in the course of other diseases; that, so occurring, its features may be modified in various ways—so far modified, indeed, sometimes as to escape recognition altogether. It is then called (and no one can quarrel with the name) "latent pneumonia." One author, as angry with a disease which so escapes detection, speaks of it when it assumes this shape as "a low, sneaking inflammation."* Similarly, the writer whose definition I first quoted alludes later on to obscure and latent forms of attack which have no resemblance to his first description; and Sir Thomas Watson appends to his graphic description of the disease the caution: "All that I have hitherto been saying relates to acute pneumonia, as occurring in a previously healthy person; but pneumonia having that character and so occurring is a much less common disorder than most persons appear to suppose, or than I formerly thought it to be." "Inflammation of the pulmonary substance," adds this last author, "is apt to supervene insidiously upon various disorders which are of every-day occurrence—upon bronchitis, upon phthisis, upon disease of the heart, and upon fevers, especially the exanthematous fevers." In the more dogmatic enunciations of Dr. Walshe we find the varieties of pneumonia arranged in a table.† From this it appears that, in its "secondary or intercurrent origin," pneumonia depends on a list of acute diseases—in which rheumatic fever occupies the

* Dr. Sieveking in Jones and Sieveking's *Pathology*, p. 428.

† Walshe *On Diseases of the Heart and Chest*, 2d edition, p. 439.

first place, and acute diseases of the brain the last—and on a list of chronic diseases, in which pulmonary tuberculisation and cancer occupy together the first place and Bright's disease the last. Subsequently he writes :* "Instead of running the ordinary course, with marked subjective symptoms, pneumonia may be completely latent. Pneumonia occurs in this form solely under circumstances of general physical debility." He concludes by reminding us that, in treatment, "we must remember that the inflammatory character of the local malady is modified more or less seriously by the general state of the system." "It is exceedingly probable," he adds, "that various differences exist in the intimate constitution of many of the intercurrent pneumonias, though at present no absolute proof of the fact can be given." Other authorities might be quoted who thus vaguely allude to declensions from the typical form of pneumonia. Thus Dr. Stokes speaks of "typhoid pneumonia," which he explains to "include a variety of cases seen more frequently in hospital than in private practice; in which, whether from the low state of the constitution, the complication with other local diseases, or the pulmonary affection being secondary to a general morbid condition, we find a pneumonia often more or less latent, and accompanied by extreme prostration."†

All this seems to be a very inadequate account of the matter. First we are told at length of a disease which is characterised by certain well-defined symptoms. It is next intimated that these symptoms undergo modifications under various circumstances; and that, in fact, the modified disease is far more common than the simple one. It soon appears, moreover, that by "modifications" no less is meant than that the disease assumes an entirely new shape. The statement amounts to this. In certain cases, in a certain definite way, the lung becomes consolidated (inflamed, as some believe), and this change is accompanied by such and such symptoms; but much more often the lung is wont to become consolidated (inflamed or not) under very different circumstances from these; and although all these forms of lung-consolidation are called pneumonia, the description we give applies only to the least common.

* P. 443. † Stokes *On the Chest*, p. 338.

It is true, indeed, that some authors have described in order certain varieties of pneumonia, but these varieties refer only to as many distinct pathological conditions: they are not mentioned with any view to illustrate the various clinical aspects of the disease. For instance, Dr. Todd* recognises, besides the simple disease, four other forms—viz. pneumonia complicated with acute gout or rheumatism, strumous, typhoid, and traumatic pneumonia. He rejects the term lobular pneumonia, as referring only to carnification of the lung from absence of air. Dr. Fuller, on the other hand, enumerates five varieties. In the first he places cases which are especially apt to occur in rheumatic persons, and which are characterised by inflammation of the interlobular cellular tissue—a condition, it must be observed, which has never been actually demonstrated. Next comes lobular pneumonia—a form which Dr. Fuller admits does not occur so often as has been supposed. The third variety includes all those cases where the disease is of secondary origin. Fourthly, latent pneumonia is mentioned. "Its peculiarity," we read, "is simply that which the name implies, and which renders the mischief very likely to be overlooked." Lastly comes chronic pneumonia—a variety which is said to be extremely rare.† Here, therefore, in a list where a form of pneumonia not known to the pathologist occupies the first place, and lobular pneumonia—admitted to be rare—the second, the consecutive form of the disease stands third; and though it is admitted to be a very frequent cause of death, no attempt is made to sketch its clinical features, or to arrange in order the diseases most obnoxious to it.

In this obscurity, one is inclined to inquire whether the various conditions of lung here alluded to have really enough in common to entitle them to be called by a common name; to question whether that pathology is correct which speaks of "a low, insidious inflammation stealing upon the lungs" in

* Todd *On Acute Diseases*, p. 368.

† *On Diseases of the Chest*, p. 241. This mode of division may give rise to confusion from the clinical differences being mixed up with the pathological. Thus a case of pneumonia may belong clinically to the fourth variety as being latent, and anatomically to the second variety as being lobular; while pneumonia of the first variety is necessarily by its definition pneumonia of the third variety.

the course of fever or of structural diseases of old standing, and which ascribes to secondary pneumonia a large proportion of deaths after surgical operations and exhausting diseases. So long as inflammation has its present associations, such an inquiry cannot be without practical importance. I shall attempt to follow it first, and very briefly, by a consideration of the causes which may be supposed to influence, or, more or less directly, to produce, the various changes which the lungs undergo in so-called pneumonia, and the relation of these to the phenomena of true inflammation; secondly (and this is the main object of this paper), I shall endeavour, by a reference to the clinical records of our Hospital, to classify a number of reported cases of pneumonia, in all of which death was ascribed wholly or mainly to that disease.

Without alluding in detail to the several steps in the inflammatory process, it may be stated generally that the condition which immediately precedes it, viz. hyperæmia and congestion, may be closely imitated by mechanical means.* Venous obstruction, however produced, will give rise to an exudation which will be serous, or albuminous, or spontaneously coagulable, according as the pressure is less or greater. It is impossible, in short, to distinguish the hyperæmia due to this mere passive congestion from that which is due to commencing inflammation. It is only in the subsequent stages that the intimate characters of the exudation absolutely distinguish the two states. In reference to this point, Dr. Robinson has recorded some experiments of his own upon the renal circulation, designed to show that the character of the exudation which takes place under pressure may be made to approach very nearly to that which occurs as a product of inflammation. By obstructing in various ways the flow of blood in the renal vein, this observer obtained not only liquid albumen and blood, but fibrine. He concluded that "simple compression of the blood in its smaller vessels will, in a direct ratio to the degree of intensity of that compression, cause the exudation of an albuminous fluid, of coagulating lymph, or the extravasation of blood: its immediate effects, therefore, precisely resemble those of inflammation"—a result he would have been led to "infer from the primary

* Simon's *Lectures*, pp. 98, 99.

effects of inflammation being identical with those of and in compression of the blood and the mere consequences of that physical cause."*

But, it is said, the true inflammatory effusion thus rudely imitated has in fact characters of its own which distinguish it from any that can be mechanically produced. "In the first place, the inflammatory effusion tends to contain ingredients in larger proportion than that in which they exist in the blood. In the second place, the inflammatory effusion teems with organic life."† It is unnecessary to investigate just now these chemical and microscopic distinctions. It may be conceded that inflammation is a process which cannot be exactly imitated by any manipulation of ours; roughly, however, a resemblance between the mechanical result and the inflammatory seems to be admitted. I say, a rough resemblance; but really it is a very close one: under both conditions liquor sanguinis is poured out; in both the blastema undergoes changes and develops organic forms (only more forms in the one case than in the other).‡ The difference, it might perhaps be contended, is more of degree than of kind. It is enough for our purpose that to the naked eye the resemblance is perfect; that the changes which parenchymatous organs undergo, whether in size or increased solidity or in appearance on fracture or on section, may be due to the one kind of infiltration as much as to the other.

If these observations be applied to the lungs, it will be at once allowed that the phenomena which attend either mechanical obstruction or true inflammation elsewhere must occur with considerable modification in organs so constructed. For besides that the lungs form a second and in some respects

* Dr. Robinson's paper is in the 26th volume of the *Medico-Chirurgical Transactions*. It records the result of twenty experiments where artificial impediment obstructed the flow of blood through the renal vein. In the most striking of these, where the obstruction was incomplete, lymph was found in the bladder. "I am not aware," says the author, "that any other instance is recorded of coagulating lymph as a consequence of simple compression of the blood by venous obstruction." There follow fourteen further experiments, in which it was sought by various means to direct an increased determination of blood to one or both kidneys.

† Simon in Holmes's *Surgery*, vol. i. p. 27.

‡ Walshe *On the Lungs*, p. 346.

an independent circulation, by means of which the whole mass of blood is continually undergoing chemical change, consider that in them this fluid, abundant beyond comparison of other organs, is at all points and continually being brought into almost immediate contact with the external air, separated from it in fact by a membrane of such extreme tenuity, that physiologists are still disputing about its structure; consider that this vast network of capillary vessels is in connection, not as elsewhere, with an areolar tissue to surround and support it, but with the air-vesicles; or more truly, that the capillaries project into these cavities, their walls "exposed and bare," and with nothing save the thin membrane of the capillary itself between the air and the blood. In an apparatus so delicate, and charged with such functions, one would suppose that a very small disturbance, mechanical or otherwise, would suffice to produce changes, whether by exudation, or hæmorrhage, or what not, such as would occur only rarely and as an extreme result in the more compact and less blood-laden organs. If then we learn of the kidney, for instance, that by partial compression of the renal vein products are obtained which resemble nearly those which belong to inflammation, we should infer, I think, that such result would be obtained much more certainly and with much less inducement from any similar embarrassment of the pulmonary circulation. Still further, when it came to be considered that obstruction of a purely mechanical kind, rare elsewhere, is often obtained here by defect in the valves of the heart, we should be prepared to find that, in such cases more especially, exudation into the air-vesicles was by no means unfrequent. In a word, apart from the doctrine which would account for all morbid changes in organs by reference to inflammatory action, it would seem that consolidation of the lung might often be amply accounted for on physical grounds alone.

It is true, no doubt, that this purely mechanical explanation is not alone sufficient to account for all cases of hepatisation; to some even it may not be at all applicable. It is reasonable to suppose that there is a middle ground between consolidation mechanically produced, and that which is wholly the result of inflammation, where the same effect follows

from the joint operation of both physical and vital causes. Thus in some cases we may appeal to the operation of that law, so to call it, which requires that the circulating fluid, and the channels through which it flows, should bear a certain relation to each other. It may be conceived, that when this relation is disturbed by defect on either side, the blood, hampered and retarded in its progress through the capillaries, may on that account the more readily part with some of its constituents. It may be conceived otherwise; and in some cases I shall try to show presently that it can be proved that poisoned blood, or blood overcharged with some of its natural ingredients, may be so far impeded in its course that its activity is not sufficient to keep it fluid—it coagulates in the vessels themselves. Such a result, however it may differ intimately from pneumonia, leads at least to consolidation of the lung, and must give rise to physical signs during life identical with those ascribed to pulmonary inflammation. Lastly (it is unnecessary here to consider the solidification which results from external pressure), we may refer to those cases of protracted dying, where a sort of life is maintained long after the heart has ceased to be sufficient for its work. Here it is well known that in the remote and depending portions of the lung a condition is wont to arise which has often been described as the result of inflammation.*

In these several ways, some admitting of a physical explanation, others nearly allied to or identical with the inflammatory process, it is easy to conceive that the parenchyma of the lung may become infiltrated or consolidated. Such a result would appear to be no sure sign of inflammation. Do we then obtain more certain indications from minute pathology? I turn again for a moment to authorities. Dr. Todd indeed states his own opinion very plainly, that the

* It may appear, perhaps, that in this endeavour to restrict the term 'inflammation,' I am in fact only alluding to some of the circumstances under which it is allowed that certain products occur in the lungs which pathologists are willing to recognise as inflammatory products. I cannot think so. Inflammation, it must be remembered, has a programme of its own, in which mere physical agency plays quite a subordinate part. "A part does not inflame because it receives more blood; it receives more blood because it is inflamed. The afflux is due to an influence primarily exerted by the part" (Simon's *Pathology*).

post-mortem appearances due to passive congestion or to early inflammation are precisely similar, and relies on the lung being hepatised as "furnishing the only certain indication of pneumonia having existed during life."* Other authors would be more precise. Thus Dr. Walshe, in describing the difference between "passive congestion purely a result of failing vital power" and actual inflammation, writes: "As a general rule the distinction can be effected through the following characters: congested tissue is externally less deeply livid, internally shows blood-staining, partially removable by washing; it collapses more, crepitates more, furnishes more markedly frothy and less markedly red liquid on section; is of lighter specific gravity, and firmer in consistence than inflamed substance."† As yet, be it observed, no minute distinctions are mentioned; and to say that one condition is more markedly frothy or more markedly crepitant than the other is a difference of degree which must be worthless as a guide when it is allowed that the amount of frothiness and of crepitus is liable to variation in the several stages of both processes. But besides this passive congestion, we read of active congestion and mechanical congestion;‡ and the last form has three classes. Two of these "resemble anatomically the active variety, while the third more nearly approaches the passive." Of this third class it is said, moreover, that amongst its results are "low pneumonic exudation, hæmorrhage," &c.

The practical value of these fine distinctions is somewhat impaired by what follows. "In exceptional cases," we read, "where the blood is hypinotic, congested tissue may break as readily under pressure as if it were inflamed; and sometimes from the mode of decumbency after death, sometimes from inexplicable causes, either lung may be much more involved than its fellow." In this difficulty reliance is to be placed in "the presence of exudation-cells and blastema *in any quantity*," as "deposing unmistakably in favour of inflammation;" but it is presently added, "I believe cell-growth on a limited scale to be perfectly compatible with mere passive

* *Acute Diseases*, p. 371. † Walshe *On the Lungs*, p. 347.

‡ "Congestion of the lung is of mechanical, passive, or active mechanism." *Walshe*, p. 345.

congestion." So that here again it is a question of more or less. On the whole, I think, that this attempt to distinguish active from passive congestion, and both from early inflammation, altogether fails, and that in spite of these numerous divisions and subdivisions of Dr. Walshe, any ordinary observer would still find considerable difficulty in referring a congested lung, from the mere inspection of it, to its proper place in this complicated arrangement.

The case is somewhat different when the stage of consolidation is reached. Here, it is said, we have evidence of an exudation which has peculiar characters of its own, distinguishing it from all other exudations; "that it contains certain ingredients in larger proportion than that in which they exist in the blood, and that it teems with organic forms."* Here, at least, the distinction is broad and unmistakable between mere mechanical effects and that which is essentially a vital process. It is not necessary to deny it. But may not consolidation too occur under other conditions than these? Dr. Walshe seems to agree that in exceptional cases it may. Dr. Robinson's experiments seem to show that probably it very often does. And, indeed, by earlier observers, and apart from minute anatomy, pulmonary consolidation is spoken of as resulting from purely physical causes. Many years ago Dr. Williams wrote: "It seems to me that the same mechanical congestion which sometimes leads to an effusion of blood in the tissue, constituting pulmonary apoplexy in other cases, if long continued enough, terminates in an effusion of lymph and an obliteration and consolidation of the pulmonary tissue."† Stokes, also alluding to a passage in Andral‡ to a similar effect, says, "We must agree with him in the opinion that the solidity of pneumonia arises, not from any deposition of lymph, but merely from an excessive congestion of blood."§

Now let it be once allowed that hepatisation is not necessarily the result of an inflammatory process, and we need not stop to consider how far the microscope would be able to discriminate the inflammatory from the non-inflammatory forms

* Simon, loc. cit.
† Williams *On the Lungs*, p. 145.
‡ Spillan's *Andral*, p. 378.
§ Stokes *On the Chest*, p. 312.

of it. For, granting that minute anatomy should always be perfectly decisive upon the question, the actual fact is, that in the recorded cases to which appeal must be made on all points connected with the statistics of pneumonia we are furnished with no such information. So long, indeed, as the decision in any particular case remains of vital importance, the lung-tissue itself is not available for our inspection, and such physical signs as can be obtained during life must be identical, in character at least, in both cases.

The signification of lung-consolidation, then, must be sought by means of its attending phenomena, from its position and extent, from its duration and mode of access. Nor will these points alone be sufficient to enable us to form a judgment—"pathological appearances must be interpreted by the light of clinical knowledge."

The merest glance at tables of cases will serve to illustrate this remark. Here, for example, are two subjects whose lungs are described as exhibiting precisely similar appearances. The one died by gradual sinking with symptoms resembling continued fever, and but little embarrassment of respiration; the other was seized suddenly with urgent dyspnœa and acute pain, and died in a few days, suffocated.* Yet the disease, so far as pathological description is concerned, is the same in both—only active in the one, and latent in the other. Instances are numerous where the contrast is as striking. How far the pathologist of the present, ignorant of the histories of these cases, might succeed in classifying them in a manner which would correspond with their several clinical features, I know not. The actual fact is, that in our records no distinction is attempted. Yet every variety of disease would appear to be nearly associated with this common name—pneumonia. It attacks the subjects of chronic diseases of all kinds; it is a frequent attendant upon typhus fever; it occurs sometimes quite suddenly and unexpectedly as a "complication" in acute rheumatism; while not unusually patients who have been sinking bit by bit with slow and painful lingering, die at last of pneumonia "in its latent form." Only rarely does it fall with fatal force upon the healthy and robust; and then its course is so rapid, and its phenomena so marked and

* Compare, *e. g.*, Case 9 of Table IV. with Case 1 of Table V

uniform, that one wonders that so fierce and definite a disease can admit of so many modifications and varieties.

I take, then, a number of cases of lung-consolidation, omitting only those that are connected with tuberculosis or with secondary deposits—cases extending over a period of more than twenty years, and exhibiting, for the most part, that stage which has been called red hepatisation. Is any clinical classification of these possible; and if so, how far does the clinical classification serve to bring together cases which are pathologically similar? In the course of this labour of tabulating, one soon found that all the fatal instances of so-called pneumonia occurring in a series of years fell naturally, in view of their clinical histories, into four classes. The *first* and largest class would comprise patients who died of tedious and exhausting diseases of whatever kind, such as the constant drain of an abscess, or from the gradual extension of large areas of ulceration, as from bed-sores; or, generally, where lingering was unusually prolonged, and emaciation extreme. Lung-consolidation, indeed, is a familiar appearance in connection with this form of decay. It is remarkable that the condition is described in terms identical with those applied to the true pneumonic consolidation, proving, in fact, that death in these cases, or in most of them, was supposed due to a low insidious form of inflammation. A *second* class would consist of the subjects of a specific fever, or of some definite affection of a secreting organ and conspicuously of uræmic poisoning and the poison of typhus. In some of these cases, the lung-affection occurs with marked local symptoms, resembling in this respect idiopathic pneumonia, with which, indeed, it may be pathologically identical. In a *third* class hepatisation would seem due almost entirely to mechanical causes, and quite independent of any inflammatory action whatever; to such causes, for example, as would arise from defective power of the heart; from obstacles being opposed to the circulation, owing to some valvular imperfection; from the altered constitution of the blood itself; or from any combination of these states. I shall hope to show in the sequel that the phenomena which attend some of these cases of consolidation are quite inconsistent with any inflammatory theory. *Fourthly*, hepatisation occurs, there is reason to suppose, as the result

of idiopathic inflammation of the lung. It is then invariably connected with pleurisy, and often with pericarditis. It runs a rapid and tolerably uniform course, and would seem to be but rarely fatal.* I believe that each of these classes has features of its own which are perfectly distinctive, and that the more typical cases under each have little enough in common. At the same time, no doubt, there are many examples of a complex kind to which it is difficult to assign an exact place. And this is what we should expect, and is in accordance, I think, with our whole experience of disease, which has always resisted being wholly comprehended in precise definitions and classifications. It is the habit, indeed, of systematic writers to describe only typical differences, leaving out of view that middle connecting ground which lies between them; but when in a purely practical spirit we descend to actual cases, their lines of demarcation, abrupt as they appear from a distance, fade into the gentlest slopes, and we find ourselves often in an undescribed middle country which has as much in common with one type as with another.

Proceeding now to discuss shortly the several classes in the order in which I have already named them, I need say but little of the first—the hypostatic pneumonia of Piorry, the *péripneumonie des agonisans* of Laennec. Take such an instance of it as the following: a middle-aged woman, always greatly distressed by vomiting during her pregnancies, has that symptom occur in the fourth month of such a time, and with so much severity and persistence, that hardly any nourishment whatever is retained. After two months of this incessant sickness, she slowly sinks exhausted and starved to death. Whatever conjecture is formed as to the material cause of this result, certainly pneumonia is not thought of, since there was neither cough, nor pain, nor dyspnœa, nor other symptoms that could be referred to the lungs. Yet it appears that in this woman, who thus died inch by inch, enduring the want of food for more than two months, "the lower parts of both lungs were red, solid, and airless, from the early stage of pneumonia." Precisely similar is the appearance of

* There are a few kindred cases—cases, I believe, of great rarity—where this true pneumonia appears to be set up by the contact of inflamed bronchules.

these organs in many of the cases cited by surgeons of patients cut off by pneumonia after surgical operations. It is difficult to persuade oneself that the majority of the instances of the kind quoted by Mr. Erichsen* are not of this class. The same may be said of the so-called intercurrent pneumonia of typhus,† and of many cases of lingering death which used to be explained by saying that "an inflammation insidiously stole upon the lungs." Clinically, indeed, this form of consolidation is characterised by an absence of symptoms. Owing to this, and from its occurrence preceding death by so short a time, it is rare for it to be recognised by its physical signs. If the term pneumonia were applicable to it at all, it certainly deserves to be called latent pneumonia. Pathologically the features of this consolidation are such as we should expect from its supposed mechanical origin. The posterior and inferior portions of the lungs are most affected, and both participate in the change pretty equally, the solid tissue shades off gradually into that which is merely blood-laden and airless. Thus out of 45 cases of supposed pneumonia found in the bodies of those who have died from exhausting diseases, I find that in 25 the hepatisation occupies both lungs symmetrically at their lower and depending parts—in that situation, in a word, where it is usual to meet with signs of engorgement; in 9 only of the whole number was there any certain indication of recent pleurisy.‡ In 1 of these 9 (the only case of the kind out of the 45) pericarditis existed.

It is, I believe, from including cases of this class in the statistics of true pneumonia that we have been led to some erroneous notions as to the nature of that disease. We have got an idea of the preference of inflammation for the lower lobes. It would appear that no such preference exists for one portion of the lung more than for another. We have considered pleurisy as a common, but by no means necessary complication. There is reason to believe that acute pneumonia never exists without some accompanying pleurisy.

* *Med.-Chir. Trans.* vol. xxvi.

† See Murchison *On Fever*, p. 184.

‡ In 7 of these the pleurisy is single, and corresponds with the hepatisation, which is likewise confined to one side. In both these respects these 7 cases are exceptional.

There are 3 cases out of the 45 already alluded to as illustrations of this first class, where, with the symptoms of continued fever, consolidation is present, not, as with the others, at the lower lobes, but at the apex of one lung or of both. The same condition will be found more amply illustrated in the other Tables. It has, indeed, been especially alluded to by Trousseau as having special features; its symptoms being of a markedly typhoïd character, and the local affection often latent. From all that can be gathered of it, it would appear that most instances, at least of this form of disease, are in fact cases of specific fever, or granular degeneration of the kidneys, with this local manifestation. We know, indeed, that few typhus patients escape some symptoms of pulmonary congestion; and it is conceivable that these appearing earlier than usual in some cases, or at a spot where we are not accustomed to observe them (as at the lung's apex), may lead to a diagnosis of pneumonia; whereas, later in the disease, or in a different situation, the same signs would either be overlooked altogether or taken as a mere local indication of the blood-disease.* Somewhat similarly, the occurrence of violent delirium amongst the first symptoms of fever has not unfrequently led to the diagnosis of meningitis. Excluding these latent cases as of secondary origin, we have no evidence that simple pneumonia, attacking the upper portion of the lung, is distinguished by any other phenomena than those which attend the same disease elsewhere.

I have placed by themselves (under Class V.) 20 cases of lung-consolidation where death was ascribed wholly or mainly to low or latent pneumonia.† Only 5 of these seem due to hypostatic congestion: the remainder cannot be accounted for in any mechanical way. Thus there are 10 cases where the upper lobe is the seat of the consolidation; and it happens, strangely enough, that in all these cases it is the right lung which is so affected. Of the remainder, the whole of one

* In the first volume of the *St. George's Hospital Reports* I have alluded to a case with marked symptoms of lung-consolidation at one apex, which in its subsequent history bore the strongest resemblance to typhus fever. See vol. i. p. 344.

† See Class V.

lung is affected in 5; but in all save one of these the disease is most advanced at the apex. Recent pleurisy existed in 5 cases only out of the 20, though the value of this sign is greatly diminished from the pleura being often obliterated by old adhesions. Recent pericarditis was found in only one case in association with consolidation of the upper portion of the right lung, and dependent apparently on granular degeneration of the kidneys.

Consolidation of the lung is said to occur after this latent manner in connection with delirium tremens, and two such cases appear in the Table I am speaking of. Dr. Stokes alludes to it as one of the forms of "typhoid pneumonia."* "The disease," he says, "commonly attacks the left lung, particularly in its lower portion, and is constantly overlooked." It appears, on the contrary, that in the 5 cases answering to Dr. Stokes's description, to be found in all my Tables, both lower lobes were affected in 2, while the remaining 3 are marked cases of hepatisation of the upper lobe of the right side—2 of them having also pericarditis.

The question occurs, whether simple pneumonia, in this latent form, does ever occur "as the sole disease." Dr. Stokes believes that it does. The evidence which twenty years of hospital records supply does not contain a single undoubted case of it so occurring.

I say no undoubted case; but the authority of Dr. Stokes is so great, and the point itself is of so much practical importance, that, at the risk of being wearisome, I will allude very shortly to a case which bears upon it.† A woman, aged 36, was admitted into St. George's Hospital, after a week's illness, of which the first symptom was shivering and stitch in the right side. About the same time she got cough and dyspnœa. When first seen, she had a frequent pulse, hot and dry skin; the pulse was 120, respirations 52, the tongue dry and brown. A few moist sounds were heard at the apex of the left lung; the breathing generally was harsh and imperfect; there was neither ægophony nor tubular breathing. The case was at first regarded as one of pneumonia, and treatment by antimony was adopted. On the second day, however, though the respiration was less hur-

* Stokes *On the Chest*, p. 339. † Case 15, Class V.

ried, and there was little cough and no expectoration, delirium had set in, and an ill-marked mulberry rash was visible. The chest-sounds were less marked than at first. The patient was now supposed to be suffering from fever, and in that view the treatment recommended by Dr. Dundas was followed—that by large doses of quina at frequent intervals. In this way more than eighty grains of quina were swallowed in twenty-four hours, by which time the skin was quite cool and the pulse had fallen to 72. At the very instant that these particulars were being noted down, the colour faded from the woman's face and she immediately expired, having been under observation for about four days. In this case it was found that nearly the whole of the right lung was in a state of gray hepatisation. The pleura was natural, both ventricles of the heart were uncontracted, and the blood was fluid.

Now I am not arguing that this patient must have had fever because she was treated for it; still, it must be allowed the history of the case corresponded in many points with that of fever (typhus was prevalent in the hospital at the time), even to the appearance of a mottled eruption; at the same time, there was nothing in the post-mortem examination to negative that view. On the other hand, if the case be regarded as one of simple pneumonia, latent during the greater part of its course, it is, so far as our hospital records go, a unique case; for in no other does simple pneumonia occur without the accompaniment of pleurisy. In other words, in every case where lung-consolidation, both from its pathology and history, may not reasonably be looked upon as secondary, there is pleurisy going along with it.

From this digression I proceed to the second class—that in which hepatisation occurs as a consequence of failure in the function of some secreting organ, or owing to any cause which gives rise to a poison in the blood. The illustrations under this heading differ from the latent ones of which I have just spoken, inasmuch as, for the most part, the implication of the lungs is sufficiently apparent during life, and recognised as consecutive on some definite disease elsewhere. The cause of hepatisation in these cases of blood-poisoning, or in some of them, is expressed by saying that the

relation between the fluid and its channels is disturbed, that the circulation is thence impeded, and that so exudation takes place. Take, for instance, the case where an interruption to the action of the kidney gives rise to acute anasarca. Here, following the kidney-derangement with a remarkable promptness, we get an infiltration into the cellular tissue of the whole body. Infiltration of what? That it is not a mere pouring out of water one can easily convince oneself, by the tenseness and firmness of the swollen limbs. It has been called, indeed, fibrinous dropsy, and, still earlier, was known as inflammatory dropsy. By whatever name we call it, it must at least be allowed, that in the lungs a similar infiltration would give rise to hepatisation.*

Consolidation arising in this manner would be general throughout the lungs, but most marked at their lower and posterior parts—resembling, in fact, that form which we have described as due to hypostatic congestion—though the rapidity with which the change was brought about would prevent any similarity in clinical respects. It appears, however, that this general and symmetrical consolidation is exceptional, and that in most instances the appearance of this kind of hepatisation resembles nearly that of true pneumonia: it is confined to one lung, its boundaries are sharply defined, pleurisy exists along with it, its chief seat is often in the upper part of the lung. Pathologically at least (however it may differ in its duration and general symptoms), it is unnecessary in such cases to dissever this consecutive disease from simple idiopathic pneumonia. As to its origin, we are left to suppose that the irritation of the vitiated blood excites in the lung, now in this part and now in that, a process which in its main features is strictly analogous to the inflammatory process. We read, indeed, that it may be "the

* See Jones and Sieveking's *Pathology*, p. 95: "Vogel does not seem to discriminate between fibrinous dropsy resulting from hyperæmia, and that resulting from unequivocal inflammation; and probably it is not necessary. The one condition is the inceptive of the other, and passes into it by imperceptible grades, or may exist in various degrees along with it." What is the exact force of the word "probably" in this quotation, or what is the meaning of the expression "unequivocal inflammation," when it is allowed in the same breath that such inflammation is not to be distinguished from hyperæmia?

tendency of the *materies morbi*, under certain atmospheric or epidemic influences, to excite irritation in particular portions of the respiratory apparatus."* Whatever such language may mean, it is to more practical purpose to observe that such cases of secondary pneumonia are oftenest met with in connection with diseased kidneys; its occurrence from failure or imperfection of other secreting organs (as of the liver) is far less obvious.

In tabulating 30 supposed examples of this form of disease (Class II.), 8 occurred in which it seemed probable that mechanical obstruction had its share in the result. Excluding such as of a mixed kind, we have, out of 22 cases, 8 in which the kidneys were markedly granular; in most of the remainder these organs were enlarged,—in some, as it would appear from the surrounding circumstances, owing to "amyloid" change, in others as a consequence of scarlatina or acute nephritis. In at least 12 of the 22 cases recent pleurisy is present. Of the rest it is usually stated, either that the pleural cavity is obliterated or that old pleural adhesions existed. 5 cases are of pneumonia of the upper lobe; in 4, of the right alone; in the 5th, of both apices. In a 6th case the left lung is hepatised as to its upper two-thirds; in 6 cases the whole of one lung (or very nearly the whole) is hepatised, viz. the right lung in 4, and the left in 2. Pericarditis co-exists in 6 cases. In one of these (22), an instance of advanced granular degeneration of the kidneys, the consolidation would appear to be due to hypostatic congestion; in the rest the right side is hepatised wholly in 3, and as to its upper lobe in 2.†

I have said that cases occur where, along with blood-poisoning, a mechanical obstruction seems to favour hepatisation. I come now to notice, according to my scheme, as belonging to a third class, some instances where this result appears to have depended almost entirely upon such obstruction.‡ This form of disease is best illustrated by cases

* Fuller *On Diseases of the Chest*, p. 231.

† Vide 7, 11, 16, 17, 18.

‡ Class III. It will be observed that some two or three of the cases of contracted mitral orifice do not exhibit *marked* hepatisation. They are included as helping to illustrate the general effect upon the lungs of this particular kind of obstruction.

of mitral valvular obstruction. I have recorded 15 such. Excluding 4 of these, where pericarditis was also present, and where the hepatisation seems to have been somewhat modified by that circumstance, we have 11 cases left as typical examples of the manner in which hepatisation takes place as the consequence of obstruction. As might be supposed, the two lungs participate equally, or nearly equally, in the change, which is most marked at their lower and depending parts. Often there is some amount of extravasation mixed up with it, and sometimes this "pulmonary apoplexy," as it is called, exists most in one lung, and hepatisation most in the other. Yet this hepatisation is in itself of the completest kind, and in some instances, as will be seen, is specially described as due to the infiltration of lymph. The stage of gray hepatisation seems rarely to be reached, and pleurisy is a rare accompaniment. The patients for the most part trace their first failure of health to an acute rheumatic seizure, and will describe former attacks of so-called pneumonia. Other cases in this class seem to have their origin in a feeble action on the part of the heart, owing to its fatty degeneration and the impediment of an adherent pericardium. (See cases 6, 9, 11.)

There is another way in which consolidation of the lung is apt to occur suddenly in cases of valvular obstruction. It is less purely mechanical than the foregoing, yet less dependent upon unknown causes than the hepatisation, which we have to refer to the agency of a *materies morbi*. Its causation appears to depend upon the fact that circulation is only possible so long as the constituents of the blood, the obstacles presented to it, and the muscular power of the heart, hold certain relations to each other. When these limits are past,—when, for instance, with a highly-fibrinous condition of the blood, we have a weak heart and a defective valvular apparatus,—we might suppose that any accident which should diminish the force of the blood-stream on the one hand, or tend still further to increase the quantity of fibrin which it held in solution on the other, would be sufficient to give rise to a blood-stasis either general or partial, and so to a form of consolidation which should resemble, roughly indeed to the eye, but in the completest manner to the ear, the hepatisation of pneumonia.

Now in acute rheumatism all these conditions are satisfied, and accordingly it is not very unusual in it to find consolidation coming on suddenly and without warning. Such an occurrence is commonly ascribed to inflammation; and amongst the diseases which are mentioned in books as destroying the subjects of rheumatic fever we find "intercurrent pneumonia."

This form of disease is indeed sufficiently uncommon for me to be allowed to allude very shortly to some illustrations of it.

In the year 1864 a girl 19 years of age was admitted into St. George's Hospital,* and under my observation, for acute rheumatism of no great severity, and without heart-disturbance. On the second day she had a fit of alarming dyspnœa, with catching, shallow respiration, pain in the left side and in the affected joints. Repeated auscultation failed to discover any alteration of the heart's action, except in its increased rate. As little could any sounds be detected suggestive of pneumonia, though it must be mentioned that the patient's extreme condition rendered it impossible to examine the chest very completely. After remaining in great distress from breathlessness for two days, yet free from any mental disturbance, this girl died. On post-mortem examination the pulmonary artery, as far as its third and fourth divisions, was found to be filled with decolorised coagulum, and there was a shred of lymph in the right middle cerebral artery. The lower lobe of the left lung is described as "much solidified from pneumonia, and sinking in water." The heart was uniformly covered with recent lymph. This, though a sufficiently well-marked instance of fibrin being deposited in the course of acute rheumatism, and giving rise to partial consolidation of the lung, is by no means the most characteristic case of the kind. In the previous year a boy of 9 was admitted with acute rheumatism.† After eight days' residence he was attacked with "double pneumonia." The exact manner and symptoms of this attack I have forgotten. He recovered from it in a week. He next gets a return of pain in the limbs and alarming dyspnœa; the pulse rises to 120, and there is much visible pulsation of the carotids; free respiration, however, is still heard in the chest. This attack too

* Case 21 of Class III. † Case 11 of Class VI.

passes off, and he is up and about again, well, or nearly well. When so far recovered, and with perfectly unembarrassed breathing, he has one night a sudden attack of angina and dyspnœa, which carries him off in a few hours. Here the whole of the right lung, except quite the apex, was red, solid, and airless, "evidently," it is written, "in the first stage of pneumonia." The left lung too is affected in exactly the same manner, though less uniformly. The pericardium is adherent by recent lymph, the mitral valve very much thickened by fibroid matter.

Now the death of this boy and its attending circumstances must be accounted for, I think, in one of three ways. Either the consolidation had been going on for some time, had been "latent," as we say (and so latent that the child could play about as usual); or this was an instance of inflammation of the lungs attacking its victim with exceptional rapidity and exceptional symptoms; or else it was a sudden arrest of the pulmonary circulation—a sudden precipitation, so to speak, of the blood, the result of ever so slight a disturbing cause in a weakly boy with blood in a highly fibrinous condition, and with only a damaged organ to propel it. The first supposition cannot for a moment be entertained; and if the second is urged, some similar case must be adduced of acute pneumonia as suddenly fatal where the concurrent circumstances do not admit of the explanation I have submitted. In the first volume of the *St. George's Hospital Reports*, in a paper by Dr. John Ogle, there is a woodcut of a preparation in our Museum which illustrates, as I conceive, the pathology of this form of consolidation. It exhibits a section of a portion of hepatised lung, with minute branches of the pulmonary artery filled with firm fibrinous coagulum.*

It is obvious that in consolidation brought about in this sudden manner, and with no prior stage of engorgement or

* The specimen is from Series vii. No. 10, and is thus described in the Museum Catalogue: "Specimen showing red hepatisation of the lung, with extensive deposit of dark-red fibrin in the pulmonary artery. Double pleuro-pneumonia had existed, and there was tolerably firm adhesion between the layers of the pericardium; the cavities of the heart were dilated, especially the left auricle, which was lined by recent yellow fibrin. The margins of the mitral valve-flaps were occupied by recent fibrin also, and slight atheroma of the root of the aorta existed." See vol. i. *Hospital Reports*, p. 168.

congestion, there should be an absence of those auscultatory signs which have been so much dwelt upon in connection with pneumonia as the first indication by which the ear is apprised of the commencing mischief.* And accordingly we find that those writers who allude especially to "rheumatic pneumonia" as one of the varieties of that affection allude to the absence of fine crepitation. Dr. Fuller, indeed, suggests an explanation, which, though ingenious, can only be accepted upon actual pathological demonstration. "In some few instances," he says, "especially when pneumonia arises in connection with acute rheumatism, crepitation never occurs —a fact which I have verified on several occasions, and believe to be attributable to the occurrence of exudation into the interlobular cellular tissue, and consequent immediate occlusion of the air-cells. The mere non-occurrence of crepitation, therefore, is not a certain proof of the non-existence of pneumonia."†

Lastly,‡ I come to speak of 16 cases of simple, uncomplicated pneumonia, which are all the instances that I can discover in searching the records of 20 years; and in this number are included 4 where pericarditis coexists. It is true there are some few cases of a doubtful character to be found in the other Tables that ought perhaps to be included here, and so bring the number up to 20, or thereabouts. On the other hand, there are cases amongst these 16 where, although the pathological definition is satisfied, the clinical history forbids us to suppose that the patient had not long been the subject of disease. What first strikes us in glancing at this list is the constant presence of pleurisy§ along with the consolidation. Next, it is observable that in a majority of the cases either the whole lung is struck, or that it is the upper lobe which is solely or mainly affected. Where this is not so—where the lower portions of the lung are alone solid—we have just those cases which are most equivocal in their history, the most suggestive of some primary disease which has eluded us. In fact, the statement that simple inflamma-

* See also cases 15 and 18 of Class II.

† Fuller, p. 221.

‡ Class IV.

§ Pleurisy was absent in one case only (15), which was admitted moribund, and without history, and probably not belonging to this class.

tion attacks the lower lobes by preference seems to be the reverse of the truth. Thus in 5 cases the chief seat of the hepatisation is one apex (in 3 the left, and in 2 the right apex); and in 6 the whole of one lung is hepatised (the *right* lung in all but one case (5), where the whole of the left lung is inflamed along with the base of the right). Hepatisation is uniform throughout 5 of these 6 cases; in the sixth it is double, occupying the whole of the right lung and the upper part of the left. Omitting 3 cases (7, 11, and 15, two admitted moribund, and all without certain history), the average duration of illness in the remaining 13 is about 8½ days.

The association of pericarditis with hepatisation of the right lung, to which I have already made passing allusion, is again noticeable in 3 cases out of the 4 where pericarditis was present. In the fourth case the hepatisation is double, though the upper lobe of the *left* lung exhibits the most advanced stage of it. This connection is so unaccountable that one hesitates to accept it on light grounds. I will just give the result of an analysis of all the cases tabulated in which pericarditis and hepatisation coexist.

In 23 cases of recent pericarditis it is the right lung which suffers in 16, either solely (which is the rule), or with very slight participation on the part of the left lung. Of the remaining 7 cases, 4 are not distinctive, viz. one exhibits extravasation of the right lung without pneumonia. In 2 the lower parts *of both lungs* are hepatised (the right most in one of them), and in the fourth case the upper lobe of the right lung is hepatised along with all the left. In none of these 4 cases is the pericarditis stated to be recent; in two, at least, it is evidently of old standing. There remain 3 apparent exceptions. Two record hepatisation of the lower lobe of the left lung, together with a thin layer of recent lymph over the heart; the third has honeycombed lymph in the pericardium, along with hepatisation of the back of the left lung. From the situation of the consolidation, and still more from the *absence of pleurisy* in all these 3 cases, they would appear to depend on hypostatic congestion rather than on true pneumonia.

It may be stated generally, therefore, that wherever in the whole series of cases recent pericarditis is associated with

marked pneumonia, it is always the *right* lung which suffers either mainly or solely. In other words, *these Tables do not contain a single case of extensive hepatisation of the left lung only along with recent pericarditis, while they contain at least* 10 *in which that is the condition with respect to the right lung alone.*

The striking feature in this acute pneumonia, as our definition has already stated, is the suddenness with which violent constitutional disturbance, in which the nervous system largely participates, gives place to extreme prostration and very rapid sinking. That this is the natural course of the disease it would be unsafe to assume—at least in the earlier cases, since these relate to a time when all affections supposed to be inflammatory were very actively combated. Thus as lately as 1845 we read of a man of 32 suddenly seized with acute symptoms, which led to a diagnosis of inflammation of the right lung.* Upon this supposition he is bled twice within a few hours, 16 oz. of blood being taken each time. He is then ordered ½ a grain of tartarised antimony every 3 hours; and the report of the third morning states that he "has been unable to sleep, owing to vomiting caused by the antimony; he is also much purged." So the dose is reduced to a ¼ of a grain. As to nourishment, there was as little as possible of it, and that little of the most unstimulating kind. He is next blistered; and though the blister, it is said, "rose well," the man sank and died, violent delirium preceding death by a little, and giving place to insensibility. When this patient's body came to be examined, it was found that these energetic means had failed to subdue the inflammation, such as it was. The lowest lobe of the right lung was in various stages of red and gray hepatisation, and there was some recent pleurisy. The upper lobes of the right lung and the whole of the left lung are described as "remarkably healthy;" nor could any disease be discovered elsewhere in the body.

It will be seen that most of these cases died at the beginning of the second week, nearly half of the time being occupied in that gradual "typhoïd sinking" which is so common an expression in these reports. Sometimes, however, in the most rapid cases,† and notably in those where the upper lobe

* Case 1 of Class IV. † See cases 7, 9, and 12.

is concerned, or where the disease has fastened on a whole lung at once, the patient dies struggling for breath in a manner as torturing as that sometimes witnessed in those who are killed by acute laryngitis. This is only an illustration of the fact, that it is rather the rapidity than the extent of disease which gives rise to acute functional disturbance.

Delirium is so marked a feature in this affection, as to have received special notice in these fragmentary reports, in 7 out of the 12 cases of which there is a complete history. In 3 of these (all men) it was of violent character, resembling delirium tremens.

There are some other points in connection with this subject which I should gladly have noticed, and especially the rarity and exceptional characters of that pneumonia which follows injuries of the chest. I would have alluded also to that form of the disease which is supposed to arise from extension of inflammation in cases of acute bronchitis. I believe with Grisolle* that such extension is extremely rare, though one or two illustrations of pneumonia are given in the Tables which might be so interpreted.

But the length to which these remarks have extended warns me to conclude. In them I have endeavoured very imperfectly and in a limited space to give some account of the various ways in which, apart from tuberculisation, it seems probable that consolidation of the lung may occur. I may just allude in conclusion to some practical considerations to which the views I have maintained naturally give rise.

A very laudable attempt has been made of late years to test the comparative efficacy of various modes of treatment in certain definitive disease by means of statistics. Pneumonia has been especially chosen by Dr. Hughes Bennett for this experiment. The cases on which I have commented would seem to show that the choice is a most unfortunate one. Simple pneumonia is rarely a fatal disease under any mode of treatment; as a secondary disease its associations are so many and various, that it seems almost hopeless to attempt a classi-

* Grisolle, while rejecting this form of pneumonia, regards the bronchitis "as constituting rather a sort of predisposition, denoting a state of the organism which will be more easily influenced by the ordinary causes of pulmonary inflammation." Grisolle *On Pneumonia*, p. 430.

fication sufficiently precise to bring cases into fair comparison. In a word, if the term pneumonia be used to express all the cases of consolidation which I have been noticing, or the majority of them, no disease can so little be treated in this way or that because of its name. If, on the other hand, the word is to be restricted to pure uncomplicated cases of inflammation of the lungs, it is clear that our knowledge at present does not enable us always during life to discriminate such cases. The argument of treatment derivable from tables must concern itself with simpler diseases than this. Pneumonia, if that common name is to be retained, must be regarded as applying merely to a certain combination of physical signs. It must be forgotten that in strictness the term has a meaning beyond what these signs necessarily imply, and that it involves a theory of causation for all the cases commonly ascribed to it, which, at most, is true only of a few.

I have but one word to add regarding the Tables. From the great space these would occupy printed *in extenso*, I have been compelled in the present volume to omit the first class altogether. The diseases comprehended in it are very various, but have the common feature, that death is lingering. In many cases the patient is exhausted by some long-continued flux—by diarrhœa, or the constant drain of an abscess. Malignant disease is not uncommon; in one instance the subject died simply starved, owing to scirrhous cancer of the œsophagus. It is rare in these cases for any attention to be called to the chest during life. The Table contains 46 cases of hepatisation of this form. In most of these the consolidation is spoken of in language identical with that used in describing pneumonia elsewhere. The lungs are described as "extensively inflamed," "infiltrated with lymph," &c. Of the seat of this form of hepatisation, and of other points in connection with it, enough has been said. The condition is, in fact, that now recognised as "hypothetic congestion;" and from a general agreement in the present day as to its nature, it is the less necessary here to accumulate instances of it.

The cases under the other classes I feel bound to retain, because to omit any of them under a view of my own as to its import would be to give an imperfect account of the evi-

dence before us in this matter. I have, however, made each case as short as possible. About 8 have been excluded, from being imperfectly reported, or incomplete in some respect. As has been stated, some cases were difficult to classify, and may perhaps be considered as wrongly placed. For example, of Class II. cases 8, 9, and perhaps 10, may belong more properly to Class IV. On the other hand, cases 11, 12, and 13 of this last class ought probably, from their histories, to be placed under Class II.

The cases (which are very unequal in the amount of their information) are described in the language of the original narrators, with abbreviations, but without omission of any matter of importance.

In further apology for the length of these Tables, I may urge that as a faithful record of all the marked cases of hepatised lung (with the exceptions already adverted to) met with in our Hospital in the course of twenty years, they are appropriate to this volume, and may have a value hereafter quite apart from the present occasion, and when the purpose to which I now put them is forgotten.

OCTAVIUS STURGES.

## Class I.

*Table of Cases of Hepatisation occurring in the course of lingering Diseases, and ascribed to low or latent Pneumonia.*

(Omitted for want of space.)

## Class II.

*Table of Cases of Hepatisation the result of Blood-poisoning.*

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| XLIX. 53.<br>M. 63.<br>1. | Rapid sinking after simple fracture of tibia and fibula. Of early history he stated that for years he had been "a martyr" to gout. "No symptoms presented themselves to call attention to chest" (Surgical Report). | Left lung congested posteriorly; lower lobe of right lung much consolidated "from effusion of lymph and serum in its parenchyma," of a light dirty brown.<br>Kidneys small, rough, and granular. | Some recent lymph on surface of hepatised lung.<br>Pericardium not mentioned. |
| LII. 236.<br>M. 57.<br>2. | Admitted at first under surgeons for cachectic rupia of six weeks' standing. Two days after, he was observed to be in a very depressed state, with cough and oppression of breathing; was stimulated and blistered. The following day he was in a typhoid state, with dry tongue and difficult articulation, but no confusion of mind; lying constantly on his left side. He was cupped to ℥x., and afterwards dry-cupped. He sank the same day. Three days (Medical Report). | The lungs on both sides full of reddish frothy fluid; but all parts floated, except the middle lobe of the right lung, which was almost entirely consolidated and of a light buff colour—the gray hepatisation. Bronchial tubes very vascular and full of thick mucus. Some old inactive cretaceous deposit at both apices.<br>Kidneys weighed 8 oz., were highly granular, and with diminished cortical part and numerous cysts.<br>The heart weighed 15 oz. | A little reddish fluid in both pleuræ, and some old adhesions in one; no lymph.<br>Pericardium not mentioned. |
| L. 55.<br>M. 44.<br>3. | Admitted with pain in the chest, cough, and dyspnœa. Had had dropsy of legs and face at beginning of illness four months before. Cough had come on during last fortnight with such | Upper lobe of right lung consolidated by recent inflammation; of grayish mottled appearance; the middle lobe red and condensed; the lowest lobe congested only. | Lymph and turbid fluid in left pleuræ, so that left lung |

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| | great debility that he had kept his bed for that time. Treated by bleeding and antimony. Two days. | Heart hypertrophied; valves healthy. Kidneys rather large, pale, mottled. | was compressed thereby, its lower lobe being impervious to air. |
| XLVII. 219. F. 67. 4. | Wretched cachectic person. Admitted for general pains about limbs; severe pain in epigastrium; frequent vomiting. The last symptom more especially for nine months; pyrosis, &c.; no cough. Died by gradual sinking; vomiting being chief symptom. Six days in hospital. | Upper lobe left gorged with serum, but crepitant; lower lobe throughout quite solid; in parts with red hepatisation, and in parts with gray hepatisation, readily breaking down. Lower lobe right lung inflamed; larger portion in red hepatisation. Upper lobes crepitant, loaded with serum. A small tubercle at one apex of chest. Kidneys much diminished; cortex nearly all absorbed. | Old adhesions left side; layer of recent lymph on lower lobe. Firm adhesions right side; recent lymph at lower part. |
| LIV. 123. M. 28. 5. | First admission in March 1853 with severe bronchitis. He had been subject to cough and dyspnœa for five years. His face was dusky, and once the sputa were streaked with blood. He left the hospital in April, still with cough and rather dusky face. Re-admitted in May 1854, in a more depressed state. Had not been free from cough in the interval; last taken suddenly worse two days previous, with pain in left side. Sputa were abundant, frothy, and muco-purulent. No mention of side-pain after admission. Pulse was weak and rather frequent. Stethoscopic sounds those of bronchitis, except some amount of dulness. Five days. | Body in good state. Lower part of right lung was emphysematous. Almost all remaining portion in a state of hepatisation, solid, and in places yielding a grayish fluid. Upper and middle parts presented a granular surface on section. At one part of middle portion of upper lobe a small amount of fluid within an irregular cavity. Left lung emphysematous; at lower part congested, crepitant. The bronchial tubes vascular and containing much mucus. | On right chest recent adhesions, some fibrin, and yellow fluid. Heart and pericardium natural. Blood thin and watery. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| IX. 238.<br>M. 31.<br>6. | An intemperate sailor. Four or five months before admission, he walked thirty miles in the rain. He then sat down in a public-house and let his clothes dry on him while he drank. The next morning œdema of legs appeared, and dropsy continued up to time of admission. Urine was then highly albuminous. After a few days, some blood-tinged sputum was observed. Progress of the case marked by orthopnœa and increased anasarca, death occurring, after long lingering, three months and a half after admission. | General dropsy.<br>There is a little fluid in the left pleura; adhesions of right. The upper lobe of the right lung is hepatised and condensed from infiltration of lymph. Upper and part of lower lobe of left lung is in a similar state.<br>The kidneys are small, smooth, and mottled; their cortex not diminished. | Fluid and old adhesions of pleuræ. |
| LIII. 73.<br>M. 48.<br>7. | A fat, flabby, ill-conditioned man, evidently in the habit of free drinking. Admitted for pain in hands and shoulders of four days' duration. The hands were slightly swollen. He had great difficulty in moving; was bled twice (to ℥xviij. in all). The sweat had the usual acid odour (he had had cough for three months). At each apex sonorous râles were heard with the expirations; but there was no dulness. On the fourth day, tremor and tendency to delirium. Both these increased on the fifth day, and the sounds of pericarditis were heard. The wandering was now very similar to ordinary delirium tremens. The patient now gradually sank, and died on the twelfth day. | Left lung somewhat congested posteriorly; but crepitant throughout. The lining membrane of the bronchial tubes was inflamed and loaded with frothy muco-purulent fluid. The *upper lobe* of the right lung was completely solidified from red hepatisation. The tissue of the organ was soft and easily broke down.<br>The heart was much enlarged, weighing 23 oz.; all its valves were healthy.<br>The kidneys were large, weighing 15 oz.; healthy in structure. | Recent adhesions between pleuræ, corresponding to inner side of upper lobe of right lung and surface of pericardium.<br>Three ounces of serous fluid in the pericardium; a shaggy layer of recent lymph in its visceral surface. |

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| LV. 84.<br>F. 28.<br>8. | Nothing said of early history. Ten or eleven days ago took cold. Had rigor, cough, and pain in *left* side; was leeched and blistered. On admission was very prostrate, fainting when raised; loud crepitation was heard at the lower part of the left side. Second day rubbing is heard at the base of the heart; the sputa were yellow, copious, muco-purulent (calomel and opium); loud gurgling was heard all over the chest. She died on the third day. | Very much emaciated.<br>Left lung much compressed; numerous very old adhesions on the right side. All the right lung hepatised and easily breaking down. | Turbid yellowish fluid in pericardium.<br>The serous membrane covering right auricle thick and opaque.<br>Outer surface of left lung covered with thick layer of recent lymph.<br>Pleural cavity containing large quantity of straw-coloured fluid. |
| LX. 136.<br>M. 64.<br>9. | A hard drinker. Ill for a month with boils or superficial abscesses about nates. A week ago, when getting out of bed, slipped and broke his ribs. Three days before admission, dyspnœa. On admission orthopnœa and severe dyspnœa (dulness and large crepitus over upper of right lung). Ordered squills, bark, and ammonia. On second day, calomel and opium and wine. On third day was restless and wandering; breathing more difficult, and much tenacious matter sticking about the mouth. Died next morning. Three days and a half. | Body rather fat.<br>Eighth and ninth ribs of right side fractured, with no attempt at union.<br>Upper lobe of right lung throughout in a state of gray hepatisation (advanced); the lower lobe spumous.<br>Heart healthy; extremely full of decolorised clots on both sides. Spleen diffluent; kidneys slightly granular; the pelvis containing much fat. | Pleuræ both adherent; not injured by fracture. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LV. 97.<br>F. 59.<br>10. | A debilitated-looking woman. A month ago she was attending a neighbour in child-birth, and there caught cold. Two weeks before admission the cold became worse; cough, with slight spitting, succeeded, and she had shivering and pain in the loins. On admission she had pain in left side, and cough (her general condition is not further described); pulse was 106. She was blistered, and given calomel and opium. After six days she was free from pain, and the drugs were stopped. Next she was observed to be feeble and anxious, with rapid pulse and dry tongue; sordes on lips, &c. (twelfth day). Fourteen days in the house. | Emaciated.<br>The lower lobe of left lung and the back part of its upper lobe in a state of gray hepatisation, solid, sinking in water; the parenchyma infiltrated with lymph and pus; the front of upper lobe healthy. Lower lobe of right lung like lower lobe of left; other parts of both lungs œdematous.<br>Heart healthy. Other viscera healthy—not specially mentioned. | Old adhesions both sides, but much more extensive on the right.<br>Pericardium not mentioned. |
| LV. 205.<br>M. 26.<br>11. | A labourer, who had been six days ill 'with cold and cough,' and had spit a very little blood. On admission was flushed, and with full bounding pulse; not rational enough to give his full history; same night he became very noisy; the urine (suppressed for a time) was found to be albuminous; head very hot, great thirst; some crepitation and dulness at lower lobe of right lung. By the third day the physical signs and febrile symptoms had increased; fourth day twitchings of hands and low muttering; tongue now (fourth day) became black and fissured, with sordes on lips and congested face; fifth day some wine was given (antimony and the treatment hitherto being discontinued). The ex- | Body in good state. No œdema.<br>Whole of right lung completely hepatised (gray); several small abscesses in various parts. The left lung was natural. The bronchial tubes are not mentioned.<br>Kidneys were large and solid, with very yellow cortex, greatly mottled on the surface. | Right pleura obliterated; a little fluid (yellow) in left.<br>Pericardium coated with thick layer of recent lymph. |

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| | pectoration was now brownish, it had before been rust-coloured. Pulse became less frequent and tongue cleaner. Remained two days in this favourable state and omitted all medicines. On the eleventh day began to sink, and had constant vomiting. Eleven days. | | |
| LV. 207.<br>M. 42.<br>12. | An intemperate man. Seized five days before admission with pain in left side and vomiting. On admission, urine rather albuminous; tongue dry and dirty; full quick pulse. Vomited whenever he moved. Sputum frothy, muco-purulent (cough and some expectoration for years). Given stomachics, &c. Retching returned. He sank slowly. Six days. | Whole of left lung (except upper lobe, which was natural) firm and full, in state of gray hepatisation.<br>Lining of bronchial tubes of affected part very highly vascular. The same tubes in upper lobe comparatively pale.<br>Right lung quite natural.<br>Kidneys cystid, granular, with adherent capsules.<br>Liver pale. Other organs natural. | Old and recent adhesions left side, and much sero-purulent fluid.<br>Heart and pericardium natural. |
| LXII. 43.<br>M. 28.<br>13. | A labourer, admitted with febrile symptoms and weak pulse; pain under right nipple, and slight difficulty of breathing; spitting rusty mucus. Had been ill five days. The defined symptoms above only two days. No dulness detected till second day. From the physical signs, consolidation appears to have begun at the upper part of the lung. Given antimony wine; and later, calomel and opium every four hours. On the fifth day became very violent, and continued noisy that day and the following; vomiting after everything, and obstinately refused food, &c. No great dyspnœa now, and the spitting had almost ceased. Sixth day, became cold and collapsed, and died. Six days. | Right lung completely solid throughout from red hepatisation; in a few places (chiefly in the upper lobe) broken down. Left lung healthy.<br>Both kidneys very granular on their surfaces; of large size; the capsules thickened.<br>Heart not mentioned. Liver large. Other organs healthy. | Right lung surrounded by old adhesions. Left surrounded by adhesions (old?). |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LVI. 80.<br>M. 13.<br>14. | Had scarlatina a month before, which left slight œdema. Four days ago he had a fit, and a second at time of admission. On admission was blooded (amount not stated); blood highly buffed and cupped; became highly delirious; urine was very albuminous. He lay wholly on the right side. Two days or less. | Right lung very congested. The lower lobe in a state of extreme red and gray hepatisation, very few vessels or tubes being visible.<br>Kidneys pale; stellate on surfaces; very opaque; a yellow cortex. Other viscera natural. | Reddish fluid in both pleuræ; in right sac some recent soft fibrin. |
| LXII. 25.<br>F. 21.<br>15. | Admitted fourth day of acute rheumatism, having had two previous attacks. Bled to ℥xij.; cal. gr. iij. and opium gr. j. every night; alkalies. Third day very pale and white, with pain in right side and cough. Fourth day, blistering and antimony wine. By the eighth day cough was much better; she was then up, and had been so two or three days. Twelfth day, ulcerated throat observed; this getting worse up to twenty-second day, when pain in right side and dyspnœa occurred; the sputa becoming blood-stained; the urine full of albumen; stridulous, breathing as from affected larynx. Died two days after the acute symptoms. | Right lung hepatised throughout; light buff, mottled with streaks of reddish-brown; infiltrated with cells like pus, except that acetic acid displayed numerous fine granules instead of the characteristic compound nucleus. All the air-cells of a thin section were completely filled by the exudation; the walls not thickened. Ulcers on tonsil, and a "diphtheritic" membrane on pharynx; soft palate and larynx. Left lung healthy.<br>Right kidney with dilated pelvis and shrunken cortex; no obstruction being discovered. Other organs healthy. | Much serous fluid in pericardium, and some recent lymph.<br>Recent lymph about mitral and aortic valves; the former much thickened and inflexible.<br>Right pleura obliterated; much recent lymph at its lower part. A few old adhesions of left pleura. |
| LXII. 60. | Ill one year and nine months; illness beginning | Slight œdema of the body. | Tightly ad- |

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| M. 11.<br>16. | with "rheumatic gout," followed by palpitation and dyspnœa. While in the hospital had frequent distressing fits of dyspnœa. Took antimony and calomel. Twenty-two days. | The whole of the right lung red, solid, and granular on section, except some circumscribed patches in the lower lobe; these were very conspicuous from their white colour, and arose apparently from emphysema of some lobules. Some small amount of hepatisation, lower lobe of left lung. | herent and thickened pericardium. Many layers of deposition, of which the inner was the more recent.<br>Heart pale, its cavities dilated; recent fibrin on its valves.<br>Heart and pericardium weighed 20 ounces. |
| LXII. 107.<br>M. 18.<br>17.* | Acute rheumatism with heart-affection at the age of 11. Present attack began with wandering pains, two weeks ago. Ten days ago had pain in the præcordial region, which remained up to time of admission. Admitted gasping for breath, and with orthopnœa; pulse 108; much tenderness over the heart and left chest generally. Treated by alkalies and calomel and opium. Some amendment took place, and the pulse sank to 94. Fifteenth day, some œdema of the legs is noticed. From this time he varied from day to day as to dyspnœa, &c., the swelling increasing. He died exhausted. Forty-six days. | Legs œdematous.<br>The aortic valves thickened with old fibrous deposit; in one of them was a small hole; an abrupt ridge of deposit of several dates on the inner surface of the mitral valve. The right valves were healthy, and the left lung. The right lung slightly solidified, as if in the earliest stage of pneumonia. Heart weighed 1 lb. 15¼ oz.<br>The kidneys were increased in size. | Pericardium greatly thickened, and adherent to the whole surface of the heart, whose walls were hypertrophied, and cavities dilated.<br>Pleuræ not mentioned. |

* The three preceding cases have more in common with Class III.

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LXIII. 132.<br>F. 16.<br>18. | Chorea; violent convulsions, dying soon after admission as if falling asleep. History of rheumatism. Some hours in hospital. | Middle and upper lobe of right lung in a state of incomplete hepatisation ('the first stage'). The spleen dotted with small white specks smooth to the touch. | Old lymph on pericardium. Recent lymph in valves of left side of heart. |
| LXIII. 137.<br>M. 50.<br>19. | Good health till two months ago, then œdema and cough, the urine becoming scanty and bloody. Admitted wheezing, and with râles audible, and with bloody urine. Diuretics given. Œdema subsides in four days. On the seventh day sputum becomes blood-tinged; pulse rose; pain in right chest. He became very livid, and died. Eleven days. | Whole of left lung consolidated, and apparently swollen with gray hepatisation, except the apex. The bronchial tubes healthy.<br>Kidneys smooth, large, 16½ oz. in weight; ecchymoses throughout their cortex, and much congestion.<br>Large heart (23 oz.); its left ventricle much thickened; soft atheroma in the aortic valves. | Much turbid fluid in left pleura, and thick recent lymph. |
| LXIV. 43.<br>M. 2.<br>20. | Admitted moribund. Scarlatina a month before, followed, it was thought, by recovery. Two weeks ago chronic twitching. Day before admission dyspnœa and croupous breathing. A few hours. | Lower three-fourths of right lung solid, so as to sink; it had a dark brownish colour, mottled with light brown spots like circumscribed gray hepatisation. Lower lobe of left lung contained a few similar spots. A little recent lymph on inner surface of mitral valve; small speck of the same on the aortic valve.<br>Kidneys very pale, and mottled with irregular vascularity; the cortex increased; weight 4¼ oz. | Recent lymph in right pleura, and a little serous fluid. Left pleura natural. |
| LXIV. 175. | Ill a month. Debility, œdema, pain in the chest. Two weeks' cough; thick uncoloured mucus | All upper lobe of left lung and greater part of lower lobe firm, red, and granular; the tissue | Pleuræ not mentioned |

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| M. 28.<br>21. | and some specks of blood; respiration something hurried. Given squills, digitalis, and acetate of potash. Death quite sudden and unexpected. One day. | friable and heavy; most parts sank. Right lung full of serous fluid.<br>Kidneys enlarged (weight 20 oz.); smooth, vascular, a few stellate veins on surface. The cortex much increased; it had a spotted appearance, and was very full of blood, though paler than natural, owing to the presence of some opaque whitish matter.<br>Heart natural, except for one or two beads of recent lymph on the mitral valve. | (natural ?). |
| LXIV. 259.<br>F. 45.<br>22. | Admitted in state like fever. Only partially conscious. No history could be obtained. Lived in hospital some hours only. | Lower lobe of left lung and greater part of upper in condition of diffuse hepatisation, exuding purulent fluid in many places, the consolidation not generally complete. Lower lobe of right lung in state of red hepatisation.<br>Pericardium completely filled with recent lymph, layers thereof in adhesion to each other. Left ventricle hypertrophied, valves natural.<br>Kidneys finely granular, shrunken, and with diminished cortex. The organs chiefly consisting of fibrous tissue. | Some flakes of recent lymph on surface of left lung. |

## Class III.

*Table of Cases of Hepatisation from Obstruction.*

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LII. 95.<br>M. 47.<br>1. | Out of sorts for three weeks. Supposed healthy before. Some years ago had rheumatic fever (marks of leech-bites over heart). Symptoms: cough, dyspnœa, and anasarca. Heart's action quick; difficult to appreciate. Urine very albuminous; excessive dyspnœa. Rather rapid death. Two days. | *Exceeding contraction of mitral orifice* and dilatation of left auricle. Weight of heart 8¼ oz.<br>Lower lobe of left lung hepatised; not so the right; both congested.<br>Slightly granular kidneys. | Old adhesions in right pleura; in left, both old and recent adhesions.<br>A little fluid only in pericardium. |
| LI. 89.<br>F. 16.<br>2. | The subject of frequent rheumatic attacks. Admitted for palpitation; afterwards some dropsy appeared. There was a bluish flush on cheek; a cardiac bruit, and oppressed breathing (no further lung-symptoms mentioned). Rather gradual sinking. Fifteen days. | Auricles enormously distended by semi-clotted blood; vegetations on mitral valve; *mitral orifice contracted.* Other orifices and valves natural.<br>Lungs were friable and sank in water; dark red fluid could be expressed from them. The left was congested merely. | A little clear yellow fluid, and some very firm adhesions of pericardium.<br>Pleuræ very vascular; in right sac 5 oz. of reddish fluid. |
| LVI. 72.<br>F. 24. | Looking 12 or 13 only; had never menstruated. "Biliousness" for some time. On admission, blue, pulseless; heart beating 170; diarrhœa | Back part of right lung œdematous and containing a brown circumscribed patch the size of a walnut. In left lung a firm circumscribed | Fluid in both pleuræ, in right compres- |

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| 3. | and vomiting; much dyspnœa and jugular distension. Vomited some blood; got rapidly worse. Eleven days. | reddish mass at the apex, and two others in the lower lobe, the result of extravasation.<br>*Mitral orifice contracted to size of end of little finger;* tricuspid also contracted; some hypertrophy of walls. | sing the lung.<br>Pericardium universally adherent. |
| LVII. 22.<br>M. 26.<br>4. | Subject to palpitation and dyspnœa since an attack of acute rheumatism seven years before. Ill with those symptoms six or seven days on his admission; supposed from wet. Nine days. | Lungs in places emphysematous; at lower parts consolidated; firmer and darker patches here and there, as from old inflammation or old-standing extravasation of blood; but in no place was any recently extravasated blood.<br>Liver large and nutmeggy.<br>Heart very large (27 oz.). *Mitral orifice narrowed* by calcareous matter and thickening of flaps; two fingers could not pass. Left auricle very large. | Pleuræ not mentioned. |
| LVIII. 20.<br>M. 37.<br>5. | Dyspnœa only; no pneumonia mentioned or treated; intemperate; congested face; frothy sputa. Ill five weeks in a similar manner before he came under treatment. Nearly one month. | Red hepatisation of upper lobe of left lung; emphysema of the lower lobe. Right lung congested. Bronchial tubes dilated.<br>Hypertrophied heart (20 oz.). | |
| LIX. 79.<br>F. 17.<br>6. | Account of an illness (ill-defined) with delirium and increased action of heart, three years before (rheumatism ?); has had palpitation ever since. On admission, rheumatic pains about the shoulders; a loud systolic murmur; pulse regular, not very unnatural; no œdema; constant orthopnœa, but no obvious dyspnœa. Given bark and wine. Latterly, œdema and emaciation; mental wandering. Lingered long. Died as fainting. Forty days. | The lower part of each lung in a state of red hepatisation; the inflamed part melting down gradually into the healthy.<br>The pericardium firmly adherent.<br>Heart much hypertrophied; its muscular fibres in advanced stage of fatty degeneration. Some deposit of lymph on aortic valves. Other organs healthy. | Adherent pericardium. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LVII. 225.<br>F. 40.<br>7. | For twelve weeks dyspnœa and pain between shoulders. For a month has had œdema of the feet. Urine albuminous; heart 150 in the minute; pulseless; much anasarca, and a livid face. Three days. | Lungs generally pale and bloodless; but two patches of pulmonary apoplexy in the substance of the right lung near together, each about a cubic inch.<br>Kidneys rather granular.<br>Some hypertrophy of left ventricle. *Mitral orifice exceedingly contracted*, admitting only point of forefinger. | Adhesions of right pleura. |
| LVIII. 148.<br>M. 22.<br>8. | Palpitation and diarrhœa (the former ascribed to overwalking three weeks before); in bed for two weeks. No history of rheumatism. Breathing very distressed; urine albuminous; anxious to be left alone. Died suddenly, after apparent improvement. Six days. (Very imperfect account.) | Good condition.<br>Heart very large (21 oz.); ventricles very large; wall of left much hypertrophied; wall of right rigid and leathery; both filled with gelatinous clot.<br>Lower lobes of both lungs in state of red hepatisation.<br>Large fibrinous vegetations on aortic valves, which were small, rigid, and insufficient for closure. *Mitral orifice hardly admitting a finger;* its flaps rigid; the ventricular surface covered with fibrinous vegetations.<br>Spleen and kidneys containing large blocks of fibrin. | Old pleural adhesions on right side. |
| LVI. 67.<br>Lad—age not given.<br>9. | Admitted dying. History states that he had been ill eighteen months; much worse for the last six months. An attack of acute rheumatism (date not stated) had left him very anasarcous. Died shortly after admission. | Considerable œdema of lower extremities.<br>Red hepatisation of lower part of upper lobe and of the whole of lower lobe of the right lung. Lower lobes on both sides contained several large, firm, solid, circumscribed patches, where, apparently, blood had been extravasated. | A good deal of bloody fluid in left pleura, and little in right.<br>Recent pleu- |

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| | | Heart of enormous size and universally adherent to pericardium.<br>Liver and spleen congested. | risy right side. |
| LVII. 276.<br>F. 27.<br>10. | Dyspnœa for several years. Admitted with that and general œdema; the jugulars being greatly distended. Ten days. | Apoplexy in left lung. The right lung gray and quite solid.<br>The right auricle and its appendix very much dilated; orifice of tricuspid very large. Heart weighed 16 oz. | Fluid in right pleura. |
| LX. 26.<br>M. 62.<br>11. | History of acute rheumatism twice, and now for seven weeks. Cough and dyspnœa, with dropsy. Urine is albuminous; sputum rusty, "pneumonic;" delirium at night; pulse 54, very irregular. Antimonial wine, and later, stimulants. Death by asthenia without dyspnœa. Five days. | Lower lobe of right lung hepatised. Left lung healthy, but for a patch of apoplexy the size of a nut.<br>Heart large; its cavities much dilated; the walls hypertrophied; decolorised clot in right cavities. The left valves rigid and atheromatous; extreme atheroma of root of aorta. Remaining organs natural. | Serum in right pleura, and a very general lining of lymph. Serum, but no lymph, in the left pleura. |
| LX. 144.<br>M. 22.<br>12. | Cab-driver; had had rheumatic fever four years ago, and ever since palpitation. A cough came on, "from a cold," three weeks before admission, with spitting and increased palpitation. Urine very scanty and dark; œdema shortly supervened. On the day of admission sputum was blood-stained. He was very sallow and œdematous, and had orthopnœa; irregular heart and pulse (82). Given squills and saline diuretics; twice dry-cupped. The sixth day dropsy increased, he became delirious and violent, and pulse became frequent. Ten days. | Lower extremities very œdematous.<br>Heart very large, chiefly from distension of its cavities, the walls being weak and thin. The *orifice of mitral diminished* and perfectly rigid from large mass of calcareous matter in both flaps. Aortic valves healthy.<br>Left lung much congested. Whole of lower lobe of right lung in a state of red hepatisation. At its lowest part, amongst the inflamed tissue, a small spot of pulmonary apoplexy.<br>Liver soft and pale.<br>Spleen contained block of fibrin. | Much fluid in right pleura; left pleura adherent.<br>Bloody fluid in pericardium. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LX. 225.<br>M. 17.<br>18. | Ill with rheumatic pains for four days previously. For years subject to cough and slight hæmoptysis. On admission, rather acute rheumatism, with tumultuous heart-sounds. No pain in chest; a very little viscid light-coloured spitting. Bled to ℥xij.; given calomel and opium; also ten leeches over the heart (physical symptoms being those of pneumonia). Continued to get weaker and more short-breathed. Always on his back. Sank rather rapidly. About six days. | cavities. The mitral rigid; *its orifice barely admitting point of forefinger.*<br>Rather large heart; decolorised clot in all its<br>Whole of lower and part of upper lobe of left lung in a state of red hepatisation. Back of right lung in similar state, and much loaded with serum. Other organs healthy. | Much clear serum in pericardium.<br>Old adhesions right pleura; left pleura healthy. |
| LXI. 171.<br>M. 50.<br>14. | Case nearly illegible. Dyspnœa and cough, sonorous râles being audible in the right chest. Had been in previously with supposed effusion into right pleural cavity. Anasarca came on, and the legs were punctured when sloughing commenced. He lingered four months and a half. | A deep and extensive ulcer on the right leg.<br>A few miliary tubercles at apex of left lung, and some pulmonary apoplexy at its lower part. Right lung entirely consolidated by means of a gray granular deposit, which infiltrated its entire substance.<br>Heart much hypertrophied. Both auriculo-ventricular valves closely embraced by strings of yellow fibrinous coagula, *the openings both somewhat contracted.*<br>Kidneys enlarged, and a little rough. | Fluid in lower part of right pleura.<br>No recent pleurisy.<br>Pericardium adherent by stratified lymph. |
| LXI. 305.<br>F. 40.<br>15. | Admitted with dropsy. Sputa generally bloody. Account mostly illegible. One month. | Some parts of the lower lobe of the left lung were hepatised; some cretaceous masses at the apices.<br>Heart of natural size; *extreme contraction of the mitral orifice,* which barely admitted the end of the little finger. | |

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| LXIII. 17.<br>F. 50.<br>16. | Urgent dyspnœa and cough for years; present attack three weeks. Admitted blue and gasping; coarse crepitation at base of right lung, &c. Given diuretics. Forty-four days. | Lower lobe of right lung (the greater part) hepatised; the bronchial tubes congested.<br>Walls of heart thickened and yellow, fatty; *mitral orifice narrowed*, admitted but one finger. Heart weighed 16 oz.<br>Old lymph on the visceral pericardium.<br>Kidneys slightly granular; some depressions and cicatrices on their surface. | Recent lymph in pleura corresponding to hepatisation. |
| LXIII. 164.<br>F. 28.<br>17. | Dyspnœa and cough for six months (after a cold); never had rheumatism; latterly some dropsy has appeared. Admitted very short of breath, with irregular pulse and loud systolic bruit. Four days after admission the sputa became bloody, but not for long; pulse was always full and sharp, and generally above 100. Cupped and dry-cupped; antimony given and digitalis. Forty-six days. | Belly distended and fluctuating.<br>Whole of lower lobe of right lung solid, of buff colour, mingled with small patches of extravasation. The left lung, in the same situation, contained a smaller extent of the same charge. The bronchial mucous membrane was thickened.<br>Kidneys were increased in size; buff-coloured and mottled; the cortex increased in thickness; their weight 18½ oz.<br>*Mitral orifice considerably contracted* and thickened by means of calcareous deposit—only the little finger could be passed; ventricles uncontracted.<br>Some recent adhesions about intestines. | Fluid in left pleura.<br>Heart covered with false membrane of some standing. |
| LXIV. 335.<br>M. 10.<br>18. | No case. About a day and a half. | *Mitral valve thickened and narrowed;* beads of recent lymph along its auricular aspect, also on the aortic valves.<br>Both lungs largely occupied by red hepatisation irregularly diffused, natural tissue being interposed; left apex natural, right solid.<br>Heart hypertrophied (9 oz.). | Much old lymph in pericardium. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LXIV. 101.<br>M. 36.<br>19. | Caught cold, as he supposed, six weeks before from exposure to wet; health previously good but for frequent attacks of rheumatism; rheumatic fever three years ago. Admitted with œdema; ascites and blood-stained sputum; mitral bruit; action of heart regular, and not excessive; highly albuminous urine. Diuretics and elaterium given. Sputum abundant and blood-stained. Day before death erysipelas on left side of nose and some delirium. Fourteen days. | Slight jaundice; legs œdematous.<br>Greater part of upper lobe of right lung consolidated with hepatisation; the tissue soft and friable, and in some places gray, yielding much sero-purulent fluid on pressure. Small portions of the lower lobe of the left lung friable; bronchial tubes red, not containing fluid.<br>Aortic valves very atheromatous, so that they must have been permanently open; around the mitral was an enormous mass of stony deposit, which *narrowed the orifice so as only to admit the little finger*, and probably to prevent its complete closure.<br>Liver nutmeggy.<br>Kidneys natural; in places a little yellow. | Old adhesions and half a pint of fluid in each pleura.<br>Pericardium uniformly adherent by old adhesions.<br>Left ventricle contracted and hypertrophied. Heart weight 25 oz.<br>Spleen large and firm. |
| LXIV. 189.<br>M. 13.<br>20. | Anæmic and wasted; orthopnœa and slight œdema. Three months ill from dyspnœa and chest-pain. Admitted with pulse 120, and much heart-impulse. Ninth day pericardial friction audible, œdema increased, and pains occurred in the limbs (rheumatic). Rather gradual sinking. Thirty-six days. | Left lung infiltrated with serous fluid. A considerable part of lower lobe of right lung in a state of red hepatisation, sinking in water.<br>Heart hypertrophied; mitral valve thick and stiff from fibroid growth in its substance.<br>Liver congested. | Left lung surrounded by old adhesions.<br>Pericardium universally adherent by a succession of alternate layers of black coagulum and recent lymph alternately (about two of each). |

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| LXIV. 167.<br>F. 19.<br>21. | Admitted with acute rheumatism, not very severe. The apothecary was called to her on the second day. He found her breathing with much difficulty, in a shallow, catching manner, and complaining of pain in the left side, with increase of the rheumatic symptoms. No friction-sound could be heard. Six leeches applied to left side; calomel and opium given every four hours. Next day she was tender, cautious of slight movement, and very breathless; pulse 104. Nothing was made out by auscultation of the chest anteriorly. Heart-sounds were quite clear. Painful breathing, restlessness, and general distress continue till death, the mind remaining clear. Four days (or two from the seizure of dyspnœa). | Very fat.<br>A small shred of decolorised lymph at beginning of the right middle cerebral artery, not closing the channel; some of the small arteries were irregularly distended with fluid blood.<br>The lower lobe of the left lung was much solidified from pneumonia, and sank in water. The right lung was natural.<br>Along the inner edge of the mitral was a layer of soft recent lymph, of which a few beads were seen on the aortic valves. The pulmonary artery, from its origin to its third and fourth divisions, was filled with coagulum, as was the right ventricle; in many parts of the artery the coagulum was opaque, granular, and friable, evidently of some standing; in some places it was elastic and semi-transparent, and was mixed with ordinary black clot; the coats of the artery were quite natural, the clot but slightly adherent. The right ventricle contained a large quantity of yellow elastic fibrin, continuous with the clot found in the pulmonary artery. Some patches of fatty degeneration detected in some of the columnæ carniæ. | Both pleuræ contained a little fluid.<br>Some recent lymph on right lung.<br>The heart uniformly covered with a thin layer of recent lymph. |
| LXIV. 343.<br>F. 39.<br>22. | Admitted prostrate, with frequent pulse, dry tongue, &c. Lived some hours only. | Both lungs irregularly mottled, with little red patches approaching hepatisation; here and there patches of complete hepatisation. Both lungs emphysematous.<br>Spleen contained some fibrinous blocks—some hard and recent, others old and soft.<br>*Old thickening and narrowing of mitral*, which was covered with a quantity of shaggy recent lymph. | |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LXIV. 93.<br>F. 11.<br>23. | Anæmic; had suffered acute rheumatism two years before, and had dyspnœa ever since. On admission violent action of heart, mitral murmur, much pulsation of cervical vessels, pulse 136; child not greatly distressed. Given digitalis and paregoric. Did not keep bed till near her death; ate well; latterly had occasional fits of dyspnœa, pulse continuing excessively frequent, with no new symptom. Sank and died. Twenty-nine days. | Slight general œdema.<br>The lower lobe and anterior depending tip of the upper lobe of the left lung in a state of red hepatisation. In the right lung precisely the same portions were in the same state, its lower lobe less uniformly affected than that part of the other side.<br>Mitral valve covered with small, prominent, ragged vegetations, very soft, covering both edges of the valve. Partly decolorised clot in both ventricles.<br>In the right kidney two small fibrinous blocks. | Old adhesions and a little fluid in both pleuræ; beneath the left a few spots of ecchymosis. |
| LXIV. 21.<br>M. 28.<br>24. | Death so soon after admission that no history was obtained. | No œdema.<br>Anterior edge of right lung a good deal solidified, as if from pneumonia, but not sinking. Front of left lung and almost the whole of its upper lobe consolidated, of brown colour, devoid of air, sinking, serous fluid in bronchial tubes. Heart, 1 lb. 5 oz.; one of aortic valves perforated by two ragged holes; left ventricle contracted.<br>Kidneys enlarged and hardened.<br>Liver and spleen enlarged and congested. | Fluid in pleuræ; in the left old adhesions. |
| LXIV. 115.<br>M. 21. | Vigorous healthy man. Awakened one night by pain in chest and shivering, having been at cricket for a long time on the previous day | The right lung compressed by the distended pericardium against the back of the chest; the anterior portion of its upper lobe was of a dark | A few adhesions in each pleura. |

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| 25. | (in March); perfect health previously. On admission dyspnœa, tubular breathing, &c., in left chest, and dull percussion; rusty sputum. Calomel and antimony every fourth hour. Gradual amendment. After six days, lung-sounds nearly natural; three days later erysipelas attacks chest, back, and shoulder; weak, irregular, faltering pulse. Bark and ammonia. Lay on right side. Sank. Twenty-five days. | colour, quite solid, and sinking in water; the other parts of a pinkish colour, almost solid. Left lung compressed, but otherwise healthy. Heart healthy. | Pericardium much thickened, and containing two quarts of pus. |
| LIX. 79. F. 17. 26. | Account of an illness (ill-defined), with delirium and increased action of heart, three years before (rheumatism?). Has had palpitation ever since. On admission, rheumatic pains about the shoulders; a loud systolic murmur; pulse regular, not very unnatural; no œdema; constant orthopnœa, but no obvious dyspnœa. Given bark and wine. Latterly, œdema and emaciation; mental wandering. Lingered long. Died as fainting. Forty days. | The lower part of each lung in a state of red hepatisation, the inflamed part melting down gradually into the healthy. The pericardium firmly adherent. Heart much hypertrophied, *its muscular fibres* in advanced stage of fatty degeneration. Some deposits of lymph on aortic valves. Other organs healthy. | Adherent pericardium. |

## Class IV.

*Table of Cases of simple Pneumonia.*

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| XLV. 200.<br>M. 32.<br>1. | Well formed and in good condition. On day of admission seized with severe rigors, acute pain in right chest, and fever. When admitted skin is hot and dry; face flushed; pulse 108, not easily compressible. Bled to ℥xvj. Second day, pulse 120, small and weak; very hot and thirsty; a little brownish-red viscid mucous sputum. Cupped to ℥xvj., and given ½ gr. of ant. pot. tart. every three hours. Third day, pulse 108, weak; unable to obtain any rest, owing to vomiting caused by antimony; is also much purged. Dose is reduced to ¼ gr. Fifth day, in very weak state, spitting mucus mixed with blood; blistered. The blister rose well, but gave no relief. Herpes labialis now apparent. Jumped out of bed delirious. Soon after became insensible, and so gradually died. Six days. | The upper lobe of right lung and the whole of left lung "remarkably healthy." The lowest lobe of the right lung in various stages of red and gray hepatisation, adherent to the costal pleura by slender bands of lymph. All other organs healthy. | Recent pleurisy in connection with hepatisation. |
| LIV. 110.<br>F. 18.<br>2. | Cough for a fortnight, with dyspnœa, pain in chest (earlier history not given). Admitted in state of considerable depression; the face flushed, skin dusky, pulse weak, tongue dry and furred; movements tremulous; feeling of great weakness and lowness; evidently unable to bear active treatment. She somewhat rallied subsequently (same day); but still there was such a feeling of faintness, that it was | Body somewhat obese and well made.<br>Besides the marks from bleeding and the vesication from the blister, some leech-bites were visible on the chest.<br>There was a little fluid in the left pleura.<br>The left lung was somewhat congested. The right lung was perfectly solid and non-crepitant throughout; it gave out at its lowest part a turbid fluid as from gray hepatisation. | Right pleura obliterated by recent adhesions. |

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| | thought necessary to give her wine. Second day, much hesitation felt as to propriety of bleeding. The pulse was weak and rapid, but the breathing very greatly oppressed. A small bleeding was made with great care. The pulse rather increased in power, and diminished in frequency the while. The blood was of course intensely buffed. Calomel and opium now given every three hours, and a large blister applied to the side. She died the following morning. Less than three days.<br>[Verbatim report, with some curtailment, chiefly from omission of stethoscopic signs.] | The heart and all other viscera were natural. | |
| XLVII. 81.<br>M. 32.<br>3. | A free drinker. Supposed to have been ailing some time with cough and symptoms of fever; but about his work till three days before; then rigors and pain, especially in right chest. On admission, skin hot; tongue coated, rather dry; pulse 120, small and weak; aspect that of a man suffering from fever, headache and general pains. Eighteen leeches to chest; ¼ gr. ant. pot. tart. every four hours; calomel and opium thrice daily. Vomited the medicine. Third day after admission, tongue dry and coated; some wine given. (Blistered on second day.) Fourth day, delirium decided. Fifth day, unconscious; passing motions, &c. involuntarily. Some brandy given. Continued to sink, and died on sixth day. Little expectoration, and that muco-purulent. | Upper lobe left lung gray hepatisation throughout, with specks as of commencing abscesses. Lower lobe compressed and dark red; portion only crepitant. Right lung loaded with red frothy serum; lower lobe in state of red hepatisation. Kidneys rather coarse. | Left pleura generally adherent by recent lymph at back part; much purulent serum, with flakes of yellow lymph. Right pleura contained small quantity of lymph, mixed serum and lymph adhering to lower lobes.<br>Lymph and some fluid in pericardium. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of heptatisation. | Co-existence of pleurisy, or of pericarditis. |
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| XLVII. 95.<br>M. 30.<br>4. | Three days before admission, rigors, headache, vertigo, vomiting, general pains, cough with white frothy expectoration; no pain in chest; no exposure. On admission, flushed, dusky yellow, pulse 120, feeble; tongue white and rather dry; no chest-pain, even on deep inspiration. Second day, much heat of skin, and stitch in left side; tongue dry; pulse 120, sharp; rusty pneumonic sputa. Third day, bled to ℥xij.; and same evening to ℥viij.; tart. emetic. gr. ¼ every four hours; blistered. Quite gradual typhoid sinking, and death on the ninth day. | Upper lobe of left lung perfectly solid and in state of gray hepatisation; lower part equally solid with red hepatisation. Right lung generally crepitant, but at back gorged with frothy serum.<br>Both kidneys rather large and slightly granular. | Left side, extensive recent lymph, the more recent at lower part.<br>Right pleura not mentioned (healthy?).<br>Slightly turbid serum (a little) in pericardium. |
| LV. 149.<br>M. 25.<br>5. | A robust-looking man. Caught cold three days before admission; aching in back, &c.; cough and pain in the right side. On admission, face was flushed, skin hot, pulse hard; there was pain on deep respiration at lower part of right side. Leeches, calomel, and opium. Two days later, the face was livid, the other signs remaining, pulse being more frequent. Leeches were repeated and medicines given every three instead of every four hours. Third day, there was more pain at the upper part of the chest; the expression was pinched and anxious. He was now blistered, and mercurial ointment was applied to the vesicated surface. He became delirious and much lower. Fourth day, wine was ordered, and he seemed to rally. Fifth and | Body in good condition, well made.<br>The whole of the left lung was hepatised; the front part was in a state of gray hepatisation. The lower part of the right lung was hepatised. The bronchial mucous membrane was vascular, with mucus in the tubes.<br>Kidneys congested; healthy. Other parts healthy. | Left pleura full of turbid fluid and shreddy particles.<br>The membrane highly vascular.<br>The diaphragmatic portion of the right pleura coated with recent fibrin. |

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| | sixth days, he was very violent and noisy; then low typhoid, delirium, and death. Eight days. | | |
| LVIII. 64.<br>M. 52.<br>6. | Good health till eight days before; then sore throat, cough, pain in left chest. Day or two after, pain shifted to right chest. It was severe at time of admission. Pulse 90, weak; respiration weak, hurried (auscultation). Blistered over chest in front; cupped on right side. Antimony and nitre every three hours. Better till the third day, when he became very delirious. On fourth day pain in right side increased and friction was heard. Cupping repeated. Calomel, opium, and antimony every three hours. On the fifth day a large blister to the right side; difficulty in spitting. Death on the fifth day. | Left lung and pleura healthy. Lower lobe of right lung extensively inflamed, the whole of its tissue, except a small part of the outside, being infiltrated with a whitish-yellow deposit, which in parts had broken down into well-formed pus. Other viscera natural. | Pericardium distended with turbid fluid and coat of lymph, the whole membrane lined with it.<br>Heart healthy, but for a little atheroma.<br>Soft lymph in pleura, corresponding with hepatised lung. |
| LVII. 277.<br>M. 35.<br>7. | Little or no history. Appeared to have been under treatment for pleuritic pain in left chest, for which he had been leeched and bled. Some account of a blow two weeks before. Suffering intensely. Less than one day under observation. | Lower of upper lobe of left lung in a state of gray hepatisation; the apex healthy; the lower lobe much congested. The right lung crepitant throughout.<br>Liver and kidneys healthy; also heart. | Left pleura quite obliterated.<br>Surface of right lung coated with lymph half an inch in thickness. Some turbid serum. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LVI. 120.<br>M. 30.<br>8. | A "navvy," who had been ill three days with catching pain in the right side and short hacking cough. Previously quite well. Face flushed; pulse 96, feeble; tongue coated; respiration very short and hurried; crepitation of various degrees all over back of right side, and universal dulness. Salines and antimony. Bleeding on second day. On fourth day, renewal of dyspnœa and much pain in left side. Antimony omitted. Great exhaustion from this time; and he died on the fifth day. | Body somewhat emaciated.<br>The right lung completely hepatised and solid; nowhere crepitant. The bronchial tubes occupied by light-coloured coagula. The left lung was in a similar condition; but the lower part of it was only to a slight extent affected, much of it being spongy and natural.<br>Capsules of kidneys somewhat adherent; kidneys otherwise natural. | Tolerably recent adhesions, to some extent, on both sides of chest.<br>Some turbid fluid in left pleura.<br>Heart natural.<br>Numbers of shreds of fibrin in the pericardium. |
| LX. 74.<br>M. (?)<br>9. | Formerly a coachman. Good health till he got wet six days before admission. This followed by rigors and dyspnœa. Admitted blue, gasping, and speechless for want of breath; the extremities cold; dyspnœa did not diminish. Died in the evening, quite sensible to the last. Death almost entirely by apnœa. Seven or eight hours. | Back of the right lung in a state of gray hepatisation as to its upper and middle lobes. The opposite lung congested, but crepitant.<br>Structure of kidneys confused, but nothing more.<br>Other organs healthy. | Uniform membranous layer of lymph, on both sides, over nearly all the pleural membrane. |
| LXII. 148.<br>M. 62.<br>10. | A labourer. Attacked suddenly on his way to church, five days before admission. Giddiness and shivering; pain in left side; dyspnœa. In very weak state on admission. Pulse 100, very small; hands and feet cold. Ordered ipecacuan-wine in ammonia saline, and wine. Rallied a | Good condition.<br>Lower lobe of left lung in a state of gray hepatisation; pus could be squeezed out of it. The bronchial tubes were very red. The right lung healthy.<br>Heart quite healthy. | Left lung surrounded by large quantity of lymph. Old adhesions on right side. |

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| | little; then became delirious, dyspnœa more urgent. At noon of third day was dying, respiration being extremely rapid. Died gradually. Three days and a half. | Capsule of right kidney slightly adherent. All other viscera healthy. | Considerable quantity of fluid in pericardium. |
| LXIV. 128.<br>F. 50.<br>11. | Admitted moribund. Said to have been ill about five months. Died in a few hours. | All right lung, except a very small piece at its apex, converted into a mass of gray hepatisation, very granular in fracture, and pouring out pus abundantly on pressure; its weight, 3¼ lbs. Weight of left lung natural, 15½ oz.<br>Liver slightly fatty.<br>A small cyst in right ovary.<br>Heart, &c. healthy. | On right pleura, between lung and diaphragm, much gelatinous lymph. |
| LXIV. 117.<br>M. 28.<br>12. | A single man of dissolute habits; in failing health for three years, and often laid up with lung-symptoms. In his usual health morning before admission; went to work at 5 A.M.; at 10 A.M. brought home in violent fit of rigor; put to bed; soon began to ramble, and then to be violent, requiring to be kept in bed by force. On admission, continued to ramble; with difficulty kept quiet; bowels very loose; tongue dry and brown; breathing rapid; no orthopnœa; neither cough nor sputum; dulness, tubular breathing on right side. Opiate enema; calomel and antimony; brandy. Soon obstinately refused medicines. The bowels continued rather loose; much raving. Fourth day, he began to sink; occasional returns of raving; respiration very hurried. Five days. (Six days ill.) | The left lung had some patches of ecchymosis on its surface; part of its upper lobe was congested, yet contained air, and floated. Weight of left lung 18 oz. The right lung as solid and unyielding as liver. It occupied all the pleural cavity, and was entirely hepatised, save a very small patch close to its lower edge, which still contained air; elsewhere the lung was quite airless. The entire organ sank. The upper lobe was of an uniform buff colour, infiltrated with pus. The lower lobe was browner. Everywhere the texture was remarkably granular. Weight of right lung 3 lb. 11 oz.<br>Kidneys large, smooth, coarse.<br>Transparent coagula in heart's cavities.<br>Liver large; its surface very uneven; capsule thickened; the tissue gathered into sphericles, with large quantity of fibrinal matter between them. | On left pleura a small quantity of serous fluid. Both layers of right pleura coated with recent lymph. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LXIV. 86.<br>M. 23.<br>13. | Ill for a month; pain and lumps about larynx, and dysphagia; and then pain under left nipple (not "stitch"). History very imperfect, from his want of voice, and pain which speaking caused. Stout; manner natural (auscultation, signs of left pneumonia); sputum rusty; partial orthopnœa; face venous. Second day, pulse 80. Third day, pulse 88; distressed breathing; has had severe pain in left side and epistaxis. Six leeches, calomel and opium. Died on fourth day, after two severe epileptic fits, ten minutes before and at death, respectively. Four days. | Upper lobe of left lung much congested; its lower lobe in a state of gray hepatisation, exuding pus-like fluid. Lower lobe of right lung congested.<br>Cortex of kidney increased (natural appearance under microscope). Other organs healthy. | Left pleura contained a pint of purulent fluid. Recent lymph on surface of lung. A little clear fluid in the right pleura. |
| LXIV. 161.<br>F. 47.<br>14. | Ill two weeks with cough and pain in left side. These came suddenly with rigors. The sputum at that time "like currant-jelly," and some unmixed blood. On admission, much distressed for breath; frequent pulse; much thirst; cool skin. Left side dull, and vocal fremitus absent; blowing breathing. Respiration became worse, and she died. Rather over one day. | Lower lobe of left lung completely hepatised, so as to sink as a whole; it had a grayish-brown colour, and a finely granular fracture. Posterior part of right lung in a state of early hepatisation. The small bronchial tubes were packed full of very thick muco-purulent matter. The muscular fibres very conspicuous.<br>Heart natural; left ventricle imperfectly contracted. | Thin layer of recent lymph in the left pleura. |
| LXIV.<br>F. 1 y. 10 m.<br>15. | Admitted moribund. No history. | Right lung much congested; especially its upper lobe, which was nearly solid, and contained little air; red; not sinking.<br>Small dark coagula in right pulmonary artery. Yellow coagula in right ventricle. | Sub-pleural extravasation back of right lung. |

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| LXIV. 231.<br>M. 23.<br>16. | Seized with shivering and febrile symptoms two weeks before; kept bed four days; has much the aspect of fever; pulse 132; skin warm; a little thick, bile-stained sputum; averse to food; delirious. Calomel and opium every four hours. Second day, 6 oz. of port-wine; blister; delirious and violent during night; hot skin and tympanitic belly; respiration quickened, but no distress from dyspnœa. Pill stopped third day. Continued to sink till death. Four days and a half. | Emaciated. Tinge of yellow on skin and caynaction.<br>Whole of right lung in state of gray hepatisation; as solid as liver, and exuding much pus; sinking as a whole. Weight 2 lbs. 10 oz. Left lung natural; weight 12 oz.<br>Liver congested in patches. Liver-cells opaque, granular, of a faint brown. Other viscera natural. | Small quantity of purulent fluid in left pleura. On right, some clear fluid and some recent adhesions.<br>Recent lymph in pericardium. |

## CLASS V.

*Table of Cases of Hepatisation where death was ascribed wholly or mainly to low or latent Pneumonia.*

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| XLVIII. 262.<br>M. 33.<br>1. | On admission presented all the appearance of an ordinary case of fever, extreme deafness having come on at time of illness two days before; the other symptoms being shivering, headache, sickness, dyspnœa. On admission he was very dirty, p. 120; had headache and much wandering (attention not called to the chest, which was not examined till six days later); had some cough, with scanty adhesive sputum; urine was retained in bladder; delirium occurred; face became livid, and cold sweats occurred. Death, by gradual sinking, on the twelfth day. | Dark serous fluid in left pleura.<br>Posterior part of left lung was much congested and solidified; the whole of right lung was quite hepatised, firm and solid; small deposits of pus in this lung. The other organs healthy. | Some recent lymph at base of right lung. |
| LII. 173.<br>M. 39.<br>2. | Reported of very dissipated habits, and to have had attack of "inflammation of stomach" (there was mark of blister on right side of chest), for which calomel and opium had been given. On admission was very restless and excited, so that he could hardly be kept in bed; state like delirium tremens. After two or three doses of laudanum, he slept for two hours; woke more collected; his face, however, was now dusky, and breathing oppressed. He sank very rapidly, having been about a day in hospital. | The upper lobe of right lung solidified completely, light gray fluid escaping on section: supposed to be in early stage of gray hepatisation; the lower parts of lung more solid than natural. On left side, lower part of upper lobe the same as lower lobe of right; the bronchial tubes very vascular. Kidneys congested. Other organs natural. | Pleural cavities natural. |

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| LIII. 62.<br>M. 27.<br>3. | A history of having caught cold, and having been ill in consequence for three or four months. The illness ascribed to standing in water. Four days before admission, acuter symptoms. Was admitted much emaciated, with rattling sounds in bronchial tubes. About two days in hospital. | The right lung solid; reddish gray *as to its upper lobe;* other parts of lung very congested. On left side, the lower lobe in the same so-called hepatised state; the upper part congested. Much thick mucus in the bronchial tubes. | Some firm pleural adhesions on both sides, but no lymph. |
| L. 114.<br>F. 64.<br>4. | Nine days ill, the main feature being great debility and prostration, with but little cough. Sunk after seven days. | Upper lobe right lung consolidated and gray, approaching to suppuration. The left lung and lower of right lung emphysematous. | A few old adhesions only. |
| LIII. 66.<br>M. 17<br>5. | Of remarkably bloodless expression. Ailing about sixteen months, "some slight illness" from which he had not recovered. No cause could be made out for his condition. Some hæmoptysis occurred (amount not stated) seven days after admission; great prostration followed. He died suddenly the following day. [No record of examination of urine during life. It was believed that it had been tested, and found healthy. After death, that found in bladder was distinctly albuminous.] Eight days. | Exceedingly exsanguine hue noticed at autopsy; the blood very fluid; all viscera exceedingly pale, but otherwise natural.<br>Lungs very œdematous at apices. In middle and lower portions exceedingly consolidated, and of a dark reddish-brown colour, sinking in water.<br>The heart natural. | Pleuræ and pericardium natural. |
| LIV. 115.<br>M. 45.<br>6. | A Frenchman, from whom an imperfect history was obtained of eleven days' illness, viz. pains in limbs and bilious vomiting, the pulse being "pretty quiet;" no chest-pain. From yellow he gradually became jaundiced, got cough and muco-purulent expectoration. Died after eleven days. (No diagnosis of pneumonia.) | Whole of right lung, except the base, inflamed; the texture infiltrated with sero-purulent fluid. The left lung emphysematous in front, congested and œdematous behind.<br>Kidneys large and congested; their capsules rather adherent. | Recent cavity in right pleura, with thick recent lymph. |

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| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LV. 209.<br>M. 62.<br>7. | Much emaciated; a year out of health. Seven weeks lumbar pain, œdema of legs, vertigo, and great debility. On admission, urine pale and albuminous; vomiting frequent. Fourth day, diarrhœa; afterwards gradually sank. Ten days. | Body in good condition.<br>Œdema of legs.<br>Lower part of right lung in a state of gray hepatisation. Lower part of left lung slightly hepatised. | Sero-purulent fluid in right pleural sac.<br>Pericardium and heart natural.<br>Kidneys too much decomposed for examination. |
| LVII. 20.<br>M. 42.<br>8. | A butler of good general health till five weeks before admission, when he had a "cold" and dyspnœa. At this time he was knocked down by a severe blow on the left thigh; considerable swelling and partial loss of power of that limb followed. There were no symptoms to indicate chest-mischief. Fifth day he had severe rigor, followed by great collapse. Seventh day, a second rigor and collapse. Death on the eighth day. Purulent urine. | Left leg greatly enlarged.<br>The whole of the left lung hepatised; one or two masses of fibrin in its upper part. The same condition, to slighter extent, in upper part of right lung.<br>Femoral and popliteal vessels, and thin branches, occupied by dark-red fibrin.<br>The cavities of the heart dilated. | Softish rough fibrin over the pericardium; old cystitis.<br>Left pleural sac obliterated. |
| LVII. 43.<br>F. 54.<br>9. | Admitted for old sloughing ulcers; began to complain of sternal pain; stomach was leeched, &c. Lingered on, and became almost comatose a day or two before death. Thirty-four days. | Gray hepatisation of upper and lower lobes of right side. Left lung emphysematous.<br>Kidneys small, and with adherent capsules. | Recent pleurisy of right side. Left pleura healthy.<br>A little turbid fluid in the pericardium. |

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| LVII. 176.<br>F. 24.<br>10. | On admission, very much exhausted and very dirty; diarrhœa and vomiting for past three weeks. At present headache, brown tongue, weak pulse, a loud systolic murmur. Given astringents and prussic acid. The urine slightly albuminous; sensations referred to the abdomen. She lay groaning and calling out night and day. Fifteen days. | Body well formed.<br>Posterior flap of mitral very much thickened. Heart otherwise healthy.<br>The upper lobe of right lung much inflamed; its posterior part in a state of red hepatisation. The lower lobes and the opposite lung much congested, infiltrated with fatty serum.<br>Spleen large, 16½ oz.<br>Left kidney rough, small, mottled; diminished cortex. Other organs healthy. | Firm pleural adhesion right side. |
| LVIII. 37.<br>F. 29.<br>11. | Admitted with extreme debility, after child-bearing one month before. Rigors had occurred daily since that event; a dry cough and profuse sweating. Given bark, brandy, and stimulants. Thirteen days. | The body not emaciated.<br>Lower lobe of right lung in a state of gray hepatisation; its tissue in part broken down, so as to form small abscesses. The opposite lung contained several masses of extravasated blood, also breaking down in parts.<br>Kidneys pale and smooth, with stellate veins.<br>Uterus as usual a few weeks after parturition.<br>Heart large, with healthy valves and firm white clots in its cavities.<br>Spleen almost diffluent. | Fluid and recent lymph in right pleura. Left pleura healthy. |
| LIX. 131.<br>M. 42.<br>12. | Had sore-throat three months before admission. No history of syphilis obtained. The man slow and muddled and hesitating in speech; left pupil rather the smaller throughout; distinct loss of power in both hands; pulse 112. Given ammonia, brandy; later, iron and calumba. Gradually lost memory completely, and got delusions of all sorts; violent at night. Two days before death became comatose; pupils very contracted; pulse gradually accelerating up to 160. Ten days. | Emaciated.<br>Slight softening of corpus callosum and septum ventriculorum (whether post mortem, or otherwise, doubtful).<br>Lower lobe of right lung in a state of red hepatisation; rest of lung spumous, as was the left.<br>Heart and remaining organs healthy. | Pleural adhesions at left base and right apex. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LIX. 164.<br>M. 39.<br>13. | A great drunkard; suffered delirium tremens more than once. Out of health now for two weeks, with lassitude, headache, and pain in the limbs. Gave up four days before admission, and took to bed. Admitted with muttering delirium; not violent, but fidgety and restless; skin cold; pulseless; no spots. Neck blistered; wine and ammonia given. Died in a few hours. | Body in good condition.<br>Right side of heart filled with decolorised clot; extensive old pleural adhesions on both sides.<br>Left lung healthy. The whole of the two upper lobes of the right in a state of gray hepatisation, sinking in water. Bronchial tubes full of mucus.<br>A few cysts on the surface of the kidneys; their capsules adherent. | Old adhesions both sides.<br>Pericardium natural. |
| LIX. 193.<br>M. 48.<br>14. | Admitted dying. A hard drinker, who had had repeated attacks of delirium tremens. | Heart dilated and flabby, apparently fattily degenerated.<br>Lungs much congested; lower lobes on both sides inflamed and very friable.<br>Liver and kidneys healthy. | Pleuræ and pericardium natural. |
| LXII. 208.<br>F. 36.<br>15. | Admitted 28th July. A week before, seized with shivering and acute catching pain in right side. Cough came on about the same time, and, with dyspnœa, had continued ever since. On admission, aspect distressed and anxious; face flushed; respiration 52; pulse 120, and very weak; skin hot and dry; tongue dry and brown; lay towards the left side. In right side of the chest breathing was very harsh and imperfect; no ægophony or tubular breathing. A few moist sounds were heard at the apex on the left side; breathing was free. Both sides were equally resonant. Ordered antimony-wine in ammonia saline and port-wine (ʒvj.) daily. | The body was plump and in good condition. There were no spots on the skin.<br>The brain was perfectly healthy in all respects.<br>The whole of the right lung was in a state of gray hepatisation, except a small portion near the apex and a small patch at the lower sharp margin. The texture was gray and mottled, and in parts softened as if on the point of breaking down. Pus could be readily squeezed out. The bronchial tubes were congested, and contained frothy fluid. The left lung was healthy, except that it contained near the apex two minute cretaceous tubercles.<br>The left ventricle was uncontracted; it contained | The right pleura was natural. About the left there were a few old adhesions. |

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| | Last day, much the same; face still anxious; a slight cough, but no spitting. Ordered ammonia salines; port-wine ℥xvj., daily.—30th. Quite delirious; respiration not so rapid; pulse 120, with some power; tongue dry, brown, and chapped. In front of the chest on both sides air was admitted, but imperfectly on the right, and very harsh was the breathing that was heard. A few small indistinct spots (supposed to be the mulberry eruption of typhus) appeared on the belly.—31st. Delirium continued; gums and tongue covered with sordes; respiration between 50 and 60; pulse 120; skin very hot; face flushed; the eruption just as it appeared the day before. Ordered 3 ℈j. doses of quina in three successive hours; afterwards two grains of quina every four hours.—August 1st (twenty-four hours after the quina was ordered). The skin was quite cool; pulse 72; respiration 60 a minute. She put out her tongue when told, and helped herself to some water. The next instant, within half a minute of the pulse being taken, the colour faded from the cheeks, and she was dead. About four days. | fluid blood, with two or three little pieces of black coagulum. The right ventricle was also uncontracted; it contained a decolorised clot of great length and tenacity, extending into the auricle and cavæ. There was a trifling amount of atheroma on the aorta and the mitral valve.<br>The spleen and supra-renal capsules were soft.<br>Kidneys and liver healthy.<br>Large and small intestines perfectly natural.<br>Uterus contained a little purulent matter. | |
| LXIII. 125.<br>M. 33.<br>16. | He and his wife said to have been lying ill a fortnight. His appearance that of a fever-patient, but no eruption; flushed; semi-comatose; dry parched tongue; hot dry skin. Died without change. Ten hours. | Signs in brain as of a very old clot.<br>Upper lobe of left lung in state of red hepatisation, approaching gray. At the back of the left lung a patch of pulmonary apoplexy.<br>Thin layer of recent lymph in the heart, and beneath it old lymph deposited.<br>Peyer's patches congested.<br>The kidneys granular. | Adhesions (old?) in right pleura. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LX. 5.<br>M. 42.<br>17. | Admitted in a state resembling fever. Said to have been losing flesh, and out of health for three months; had shivering ten days ago, and, shortly after, a fit like epilepsy. On admission, pulse 80; general state like that of phthisical patient with fever; no cough or expectoration, or pain at chest. Lay picking at bed-clothes. Two days. | There were a few small unsoftened masses of crude tubercle at the apex of the left lung; remainder of that lung was quite healthy. The whole of the right lung was hepatised, except a layer an inch thick at its lowest part. At the upper lobe the hepatisation was gray; lower down, red.<br>Decolorised clot occupied the right side of heart.<br>Kidneys finely granular; capsules adherent; cortex somewhat diminished. | Recent lymph was smeared over the right lung. |
| LX. 108.<br>M. 52.<br>18. | A free liver, who had long suffered from eructations and epigastric pain. The day before admission, he was thrice attacked with hæmatemesis, each time vomiting about half a pint of blood. On admission, had slight cough with mucous spitting. Bronchial sounds were heard about the chest, and the liver was felt enlarged somewhat. Gallic acid and dyspeptic medicines were given. He got better after eleven days, and took an airing. The evening after, had a rigor, with great depression and want of breath. He lay from that time on his right side, evidently dying. No treatment was attempted, save stimulants. Fifteen days. | Rather emaciated.<br>A patch of consolidation middle of back part of left lung, and another near the apex. In these parts the lung was very spumous, contained a good deal of blood, and only just floated. Whole of right lung in a state of gray hepatisation, except a very small part at the base.<br>Other organs healthy, save kidney, which had two cysts on its surface, in one of which was coagulated serum having a whitish succulent mass of fibrin. | Extensive old plural adhesions on both sides. |
| LXI. 92.<br>M. 65. | Suffered privations for three months, and for as long had pains in the loins extending down the left leg. He was much emaciated. The pain | Heart healthy, but for slight atheroma; right ventricle and pulmonary artery full of decolorised clot; red blood-clot in the left ventricle. | Right pleura obliterated. A very large |

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| 19. | continued and was very acute. Two days before death, severe cough came on with viscid dark-brown sputa. The day before death there was much pain in the left chest, and dyspnœa. Calomel gr. iij., and opium gr. j., every three hours. Thirteen days. | Right lung healthy. Nearly all lower lobe of left in a state of gray hepatisation.<br>Double inguinal hernia. Remaining organs healthy. | collection of purulent serum in the left pleura, and recent lymph smeared on the surface of left lung. |
| LXIV. 186.<br>M. 35.<br>20. | Epilepsy; delirium; aspect, &c. like that of fever. Slowly died; exhausted. Five days. | Lower lobe of right lung consolidated as in first stage of pneumonia.<br>Congestion of brain-substance. Other organs appeared quite natural. | |

## CLASS VI.

*Some exceptional Cases, mostly resembling Class IV.*

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LVII. 39.<br>M. 32.<br>1. | A clerk, who had been out of health for some months; latterly he had "caught cold," and for a week kept his bed; later (exact periods are not given in the Report), acute pain occurred in the left side, like "stitch." Was admitted two days after, with pinched features, in great distress from dyspnœa. On auscultation fine crepitus, &c. Given calomel and tart. antimony every two hours; blistered; some wine occasionally. Wandering; death. Under four days. | Body in good condition.<br>The lower and posterior parts of both lungs in a state of hepatisation. Lining of bronchial tubes very vascular.<br>Kidneys large, but smooth. | Old adhesions of both pleuræ.<br>Recent soft fibrin in both.<br>Pericardium and heart natural. |
| LVII. 93.<br>M. 35.<br>2. | A potman, who had had cough and hæmoptysis for three or four months. Admitted unconscious, very prostrate, hot skin; condition like continued fever, but no spots; urine collected in bladder. Thirty-six hours. | Middle lobe of right lung in a state of gray hepatisation. The lower lobe was red, softened, and breaking down. One-third only of the whole lung floated.<br>The liver was large, mottled, and greasy.<br>Kidneys large, coarse, healthy.<br>Heart was large. | Old adhesions in left pleura. Right pleura universally adherent.<br>In front and at upper part these adhesions were recent; posteriorly lower down they werejelly-like, apparently older. |

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| LVII. 95.<br>F. 3.<br>3. | Admitted in state like scarlatinal dropsy. Unhealthy aspect, large head, &c. Three weeks ill, described as "a cold." Large quantity of bronchial mucus. No examination of urine. | Bronchial tubes inflamed, and full of frothy mucus. The lung in various parts solidified, *e.g.* at both apices.<br>Fatty liver. | Pleural cavities natural. |
| LVII. 304.<br>M. 28.<br>4. | Represented as quite well three days before admission. Drank neat gin largely on the 26th December. Breathing was affected on the 27th. Was admitted on the 28th, when his manner was quiet and natural; pleuritic friction was then audible, and mucous râles masked the sounds of the heart. Antimony, calomel, and opium. Night of admission had restlessness, which soon passed into furious delirium. Two days. | Lower lobe of right lung in a state of red hepatisation. The upper lobe in a state of gray hepatisation. Some emphysema at edges of both. There was also bronchitis. The vessels of the lungs were plugged with lymph.<br>Liver congested.<br>Kidneys healthy.<br>Brain not examined. | Recent lymph in both pleuræ and in pericardium. |
| LXIII. 20.<br>F. 40.<br>5. | (Imperfect history from her husband.) Sticking to her work (though falling down from "pain" and exhaustion) till four days before admission. On admission, dulness of right side, &c.; the patient dusky, and quite exhausted. Soon died. Under two days. (Lay low in bed; respirations very rapid and shallow; scarcely, if at all, conscious.) | Belly tympanitic.<br>The whole of the lower lobe of right lung in a state of red hepatisation, verging on gray; the whole sinking. Left pleura and lung healthy.<br>Liver slightly fatty.<br>Kidneys slightly rough on surface. Other organs natural. | Fluid in right pleura. |
| LXIII. 291.<br>F. 30.<br>6. | A large flabby woman, ill since her confinement two months ago, much hæmorrhage following delivery; sore-throat later; dropsy set in two weeks back; kept bed for last ten days; winter cough for many years, and severe dyspnœa. Admitted with extreme dyspnœa and orthopnœa; sputum yellow, and finally rusty; delirium. One day and a half. | Upper lobe of right lung in a state of gray hepatisation. In several places small circumscribed deposits of pus, which might have been regarded as minute confluent vomicæ, had any tubercle been discovered. The whole lobe solid and livid. The lower lobe and left lung natural. | Sero-purulent fluid in right pleura, and a thick layer of recent shaggy lymph. |

| Reference to Post-mortem and Case-books. | Nature of case, &c. | Post-mortem appearances: site and extent of hepatisation. | Co-existence of pleurisy, or of pericarditis. |
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| LVIII. 145.<br>M. 30.<br>7. | Cough for eight days before admission, followed (in two days) by rigors and pain in the left side; anxious; face flushed, skin hot, pulse frequent. Auscultation. No albumen in urine; rusty sputum. Antimony and calomel. Twelfth day revived somewhat, and was given wine, bark, &c. Rather sudden relapse and unexpected death. Twenty-two days. | Whole of back of left lung hepatised; the right lung somewhat congested and œdematous.<br>Kidneys rather large, with adherent capsules. | Purulent fluid and honey-combed lymph in the pericardium.<br>Substance of heart dilated and soft. Lining membrane blood-stained.<br>Pleuræ not mentioned. |
| LXII. 104.<br>F. 28.<br>8. | History of rigors and pains in the limbs thirteen days before admission; then cough and bloody sputum, the quantity of which "had decreased very much." Was told she had fever. Admitted with acute symptoms, hot skin, flushed face, husky voice. Ordered wine. Expectorated a very little dark-coloured sputum. Second day, on auscultation, friction was heard (pleural or pericardial?). Pulse 120. Ordered calomel and opium, and wine increased. Third day, pulse more frequent. Left side was blistered. She soon tore the blister off, and talked wildly. Dyspnœa was now urgent. Wine and brandy given. She gradually sank, and died the next morning. About four days. | Lower lobe of left lung perfectly solid, and devoid of air. Of a light fawn-colour and compact texture. The upper lobe quite natural; the transition from one to the other quite abrupt. Slight emphysema of the right lung.<br>One kidney dwindled into mere fibrous tissue. The other healthy, pale. | A little straw-coloured fluid in the pericardium; and a little recent lymph on the surface of the heart.<br>Pleuræ not mentioned. |

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| LIII. 254.<br>F. 22.<br>9. | Ill only a week, with cough and sore-throat, with pain in left side. On admission, face very dusky; breath very hurried; pulse 130, full, firm. Bled to 10 oz. Auscultation next day; coarse, moist sounds universally, but no dulness. Blood not buffed nor cupped. The expectoration scanty and purulent. On the 5th day there was some approach to fine crepitation or friction at lower part of left lung without marked dulness. She sank gradually, with typhoid symptoms. Nine days. | Right lung healthy and crepitant throughout, but the bronchial tubes of both lungs vascular, and full of muco-purulent fluid. Back part of lower lobe of left lung solid and compact, breaking down under pressure.<br>Gall-stone blocking up cystic duct. | A single band of adhesion in left pleura. |
| LXIII. 178.<br>F. 11.<br>10. | Dyspeptic symptoms; sudden accession of dyspnœa, and death in a few hours. Twelve days. (Had had acute rheumatism some years before, and cough for two months. Frequent pulse, hot skin, and throbbing carotids noticed before the sudden collapse of which he died.) | On lower part of left lung, and throughout the right lung, were patches of lobular pneumonia as big as peas. Old thickening and recent blood-stained lymph on the cardiac valves. | Old adherent pericardium. |
| LXIII. 265.<br>M. 9.<br>11. | Delicate. Admitted with acute rheumatism. After eight days has all the physical signs of double pneumonia, mostly of right side. Makes a good recovery in about eight days more. Convalescence interrupted, seventeen days later, by return of pain in limbs and alarming attack of dyspnœa; pulse 120; visibly pulsating carotids; free respiration posteriorly. Soon up and about; well, or nearly so. Then, eleven days after the last, a sudden attack of angina, which carried him off in a few hours. Forty-three days. | All the right lung, except quite the apex, was red, solid, and airless, "evidently in the first stage of pneumonia;" portions only sunk in water. Left lung was affected in exactly the same way, but less uniformly. The consolidation is scattered through the lung, so as to give to a section a marbled or mottled appearance. | Pericardium universally adherent by recent lymph.<br>Mitral valve very much thickened by fibroid matter.<br>Aortic valve slightly so.<br>Adhesions of some standing in both pleuræ. |

## XVI. ON A CASE OF DEATH FROM HÆMORRHAGE INTO THE PERICARDIUM,

*As a result of Rupture of one of three true and circumscribed Aneurysms of the Coronary Artery of the Heart; with Observations on Aneurysm or Aneurysmal Dilatation as a result of Embolism or Thrombosis.*

I VENTURE to think that the following case will be considered worthy of record, as being an instance of aneurysm in a very unusual locality, and as probably illustrating a not unimportant point in pathology.

In the session of 1856-7, at a meeting of the London Pathological Society,* I suggested the probability of the formation of aneurysm in certain instances (especially in the case of the smaller arteries of the body) as a result of embolism or thrombosis of a vessel; and to this subject I drew attention more at length in the *Medical Times and Gazette*† in the course of last year. I had also previously related to the Pathological Society the case of a boy‡ in whom was found after death plugging of one of the coronary arteries

* See vol. viii. of the Society's *Transactions*, p. 168, where a case of aneurysm of the superior mesenteric artery is related, from a patient with a softened heart, and having soft recent fibrinous granulations on the heart's valves.

† See vol. i. p. 196.

‡ See vol. xv. of the *Transactions*, p. 15. This patient, aged sixteen, was admitted into the hospital in a state not unlike fever, and died comatose. After death, in addition to the state of the coronary artery above described, extravasation of blood into the cerebellum, and also plugging by fibrin of the corresponding cerebellar artery were met with. In this case masses of fibrin were found attached to the edges and surfaces of the mitral valve-flaps, and to the lining membrane of the left auricle of the heart. A "false membrane" of fibrin also lined the dura mater, which was described in Beale's *Archives*, No. vi. p. 88.

of the heart, which at the part affected was *greatly dilated.* Until the present time I have not met with a single case bearing upon the question until the one which I am about to describe, which came under my own care at St. George's Hospital a few months ago, and which appears to be most probably an illustration of the proposition alluded to. At the time I made the communication to the *Medical Times and Gazette* to which I have referred, I was unaware of the fact that Mr. Joliffe Tuffnell had already contributed to the *Dublin Medical Journal** some observations on arterial dilatation and aneurysmal development as resulting from the detachment of so-called "cauliflower excrescences" on the valves of the heart, and their presence in the circulating blood. These observations of Mr. Tuffnell were based upon a most important and interesting case, given by him in detail, of an anæmic patient, aged 25, with hypertrophy and dilatation of the heart, and patency of the aortic valves, in whom a large pulsating tumour suddenly formed in the popliteal space of the right leg, the limb becoming of a much lower temperature, and of a dirty livid colour,—the result, as it proved, of plugging of the artery by the impaction of fibrinous deposit carried thither from the heart. Eventually (death occurring from other causes) collateral circulation was established, and the tumour disappeared.

I was glad to find that I could quote so high an authority as that of Mr. Tuffnell as an independent support of my suggestion. He has recently informed me that he has not met with another illustration of this subject since the one which I have just cited.

I will now proceed to give the particulars of the case which I before spoke of as having recently occurred under my care in St. George's Hospital.

CASE.—William S., aged 26, a blacksmith, was admitted into York ward January 2, 1867. He had had rheumatic fever 12 years previously, and another illness 2½ years before admission, attended by pain in the back part of the head, followed, in about two weeks, by sudden numbness in the thumb and two first fingers of the right hand, also with pains in the back, arms, and belly. One month before

* See the number for May 1853.

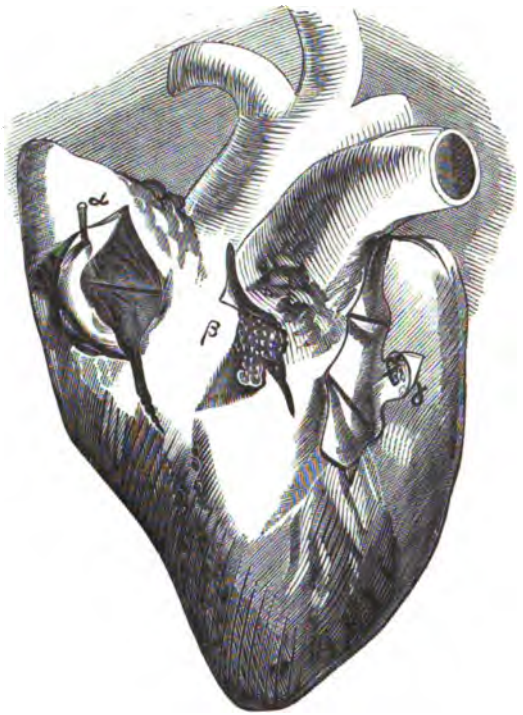
admission he suffered from another attack, accompanied by pain in the back of the head, followed (six days before admission) by intense pain in the right arm, lasting about an hour. When this pain ceased, he states that he found himself unable to move the arm and hand. He had also pain in the back, elbow, and belly. He had latterly had much sour-smelling perspiration at night, and had lost flesh.

*Symptoms on admission.*—His countenance was pale. He stated that he had at times a "dragging" pain in the right arm, which he moved with difficulty. The wrist of this arm was quite "dropped" (as we often see in cases of lead-poisoning), and he was unable to extend it. The skin of the hand retained sensibility; but he complained of its feeling numb, especially in parts supplied by the ulnar nerve. There was a patch of ecchymosis on the inner side of the right arm just above the elbow, and much hardness and tenseness of the muscles of the inner side of this arm, extending up into the axilla. He had had no blow or other injury. This tenseness was the more conspicuous as the muscles of both arms were flabby and ill-nourished. He had much pain over the region of the kidneys, increased by pressure, and was unable to take a full inspiration. The action of the heart was tumultuous, and there was roughness of the first sound at the apex, amounting to a murmur; and some observers thought there was also *an exocardial bruit.* The pulse was intermitting, irregular, and 104 per minute. There was dulness on percussion, over the right lung especially, at the apex, with increased vocal fremitus, prolonged expiration, and deficient respiratory murmur generally. The urine was found to be clear, and free from albumen, with a specific gravity of 1014. It contained no blood-casts, but some crystals of hæmatine were found in it. After a dose of castor-oil and some morphia at bedtime, his condition on the following morning was improved. After having been at stool several times, about 4 o'clock in the afternoon on the day after admission he fainted; but æther and sal-volatile having been given to him he rallied. He then complained of pain in the bowels, and wished to go to stool once more; but as it was seen that he was faint, he was put back into bed. He subsequently said he felt better, but immediately began to breathe stertorously. His eyes became fixed and staring, and he died without convulsions shortly afterwards.

*Post-mortem examination.*—Cranium. The cranial bones were natural. The brain-substance and its membranes were natural; but the larger arteries at the base of the brain were atheromatous, and several of the small veins on the surface of the posterior lobes of the cerebrum and cerebellum were *plugged with partially decolorised blood-clots.* The larger vessels were, however, free from such obstruction.

Thorax. Firm adhesion of the pleura existed on the right side. The left lung was much congested, especially posteriorly. The pericardium was *full* of firmly coagulated blood-clots. The heart was uncontracted, and the aortic valves greatly thickened by fibrinous deposit, evidently not of very old standing. On examining the surface of the

heart, three branches of the coronary arteries were found to be affected by aneurysm. Thus, holding the heart as it is situated in the body, and looking at its anterior surface (see Woodcut), on the extreme right




Woodcut showing the anterior surface of the heart on which the three aneurysms α, β, and γ are seen. The aperture in aneurysm α, through which hæmorrhage occurred, is indicated by the bristle passed through it into the cavity of the sac which has been laid open.

hand (*i. e.* the left side of the heart), and about one inch from the base of the heart, was a pouch of the size of a pea projecting from the surface (γ). This possessed tolerably thick and quite entire walls, and was full of laminated clot. It was in connection with a branch descending from the left coronary artery (passing down the anterior interventricular sulcus), which at its upper part (as indicated in the woodcut) was atheromatous, but not at all obstructed. About the middle line of the front of the heart, and near the root of the pulmonary artery was a second pouch (β), somewhat larger than a pea, feeling solid to the finger, and entirely occupied by firm consolidated fibrin. This was connected with a descending branch of the right coronary artery, which branch throughout its entire length was *wholly obstructed*, being occupied by a contracted fibrinous coagulum, and so shrunk as to be with difficulty

distinguishable from neighbouring parts. Again, to the left of the others (towards the right edge of the heart), and on a higher level than the first pouch described, was a third pouch, of about the size of a small cob-nut, almost quite empty, and with thin walls, which at one spot were perforated by a hole scarcely admitting the passage of a pig's bristle. Through this aperture the blood, which was found to fill and distend the pericardium, had found its way. This aneurysmal sac freely communicated with a descending branch of the right coronary artery, which was quite unobstructed, and in all respects healthy.

Abdomen. The liver was hard and congested; the spleen healthy. The right kidney was coarse and congested, and its capsule infiltrated with blood. At its base a large mass of recently extravasated blood was met with in its substance; and on examining it at one extremity, this mass was found to contain a cavity lined by a distinct and firm membrane, of about the size of a small pea, and containing a quantity of coagulated blood of the same character as the general mass surrounding it. This could be picked out of the cavity entire, leaving the membrane tolerably smooth. On trying by dissection to find a communication between this small sac or cavity and some arterial branch, it appeared as if such an one had existed, but it could not be altogether very satisfactorily made out. In the same kidney were also two old-standing "blocks" or masses of fibrinous deposit. The left kidney was quite natural; the large arteries of both kidneys were natural.

The right arm was very swollen on its inner side and towards the elbow, and the surface was red and darkish in colour at this part. On dividing the integuments and muscles in this region, much blood was found to have been extravasated into the muscular structure and intermuscular tissue. It proved impossible to find out exactly the source of the hæmorrhage; but two of the minute muscular branches from the brachial artery, low down in the arm, were found to have aneurysmal pouches connected with them, quite full of firmish coagulum. These sacs were perfectly entire, and one of them *was in close proximity with the median nerve.* It appeared most likely that some other aneurysm had existed, which, having given way, had allowed of the hæmorrhage amidst the tissues, &c. The small branches having the aneurysms connected with them, as also the main brachial artery, were quite free from any disease.

*Comments.*—Before proceeding to the pathology of the above case, I will make a few remarks upon certain points of clinical interest which it contains. On reviewing the circumstances of this case there can be no doubt, I think, that death eventually resulted from the giving way of the aneurysm of the coronary artery into the pericardium, which was otherwise healthy. The walls of the aneurysm had for some time been yielding and getting thinner, and at last the small aperture before described was produced. The oozing of blood

was, no doubt, gradual, as may be inferred from the small size of the perforation in the aneurysm, and from the fact that some time before death it was found that a slight exo-cardiac murmur, in addition to the interference with the first cardiac sound (the latter no doubt being due to the altered condition of the aortic valve), was audible.* Again, the irregular, intermitting pulse may have indicated this. However that may have been, the straining at stool which appears to have preceded death most probably accelerated the outflow of blood from the aneurysm. This hæmorrhage into the pericardium, in addition to the syncopal effect of the loss of blood,† must mechanically have had the result of embarrassing materially the heart, and thus of interfering considerably with the pulmonary circulation (as indicated by the congested lungs) and with that of the central nervous organs;‡ and these results would be more prejudicial as the patient was previously in weak health, and in a state to be soon overpowered by such untoward conditions. Here I would take occasion, in passing, to refer to the condition of the lungs as ascertained by auscultation. When the patient first came to the hospital, in addition to other symptoms, we found, on examining his various organs, that prolonged expiration, deficient respiratory murmur, increased vocal resonance, and some amount of dulness on percussion over the right lung and especially at the apex existed. From this, we could not help suspecting that the lung-substance was occupied at this part. On post-mortem examination, however, it proved that the lung itself was quite clear,

* In a case of rupture of the heart which occurred at St. George's Hospital last year, a "rough double crumpling sound was heard all over the heart" before death. See No. 185 in *Post-mortem Book*. The ruptured heart was catalogued as Series vi. b. 14.

† The loss of blood alone, in this case, would not have been sufficient to have occasioned death. Of course the pericardium under long distension, as in old-standing hydrops or pericarditis, will hold very much more than in the natural state; but under ordinary circumstances this sac (with the heart unremoved) will hold from 18 to 20 oz. This was ascertained for me by Mr. Pick, our pathological curator, who examined a great many healthy pericardial sacs for me. I was unable to find any mention of the capacity of this sac in any of our anatomical works.

‡ I think there can be no doubt that disease of the organs of the chest and their investing membranes may (through the agency of the sympathetic nerve, most likely) affect the vessels or structures of the central nervous organs.

and that the deviation from its ordinary physical condition was probably the result of the extensive pleural adhesions which existed. Another apparent discrepancy between physical conditions observed during life and post-mortem results, may be noticed in the case of the kidneys; for whereas the right kidney was coarse and congested, and contained in its substance an extravasation of blood and two old-standing discoloured "blocks" of fibrinous deposit, yet the urine, on examination, was found to contain no albumen or blood-casts when the patient was admitted, though some crystals of hæmatine were found in it.* Directly I saw the patient, his history, and the fact of the occurrence of the sudden pain in the arm, followed, as it was, by equally sudden and unexpected loss of power in the limb (the wrist and hand being "dropped"), along with the existence of the swelling in the lower part of the arm, made me suspect that it was a case of sudden plugging of an artery and pressure upon neighbouring nerves, though of course I could have had no idea of the presence of aneurysm of the coronary arteries. That pressure on the nerves of the arm had existed was indeed proved to be the case, though it is impossible to say whether the affection of the nerves of the arm was owing to the pressure of an aneurysm or to that of blood effused into the neighbouring textures,† or to both combined. The establishment of this pressure was no doubt contemporary with the sudden pain and the loss of power in the limb which occurred six weeks before admission; but possibly in his previous illness (two years before admission) there may have been a slight amount of this pressure (pro-

* We are quite conversant with cases in which urine contains no appreciable amount of albumen, but in which blood-discs may be discovered nevertheless by the microscope.

† That blood extravasated into textures around nerves may by pressure affect those nerves, was illustrated by a case which occurred in St. George's Hospital in January 1866, and was related by my colleague Dr. Dickinson to the Pathological Society. The patient—an intemperate man—suffered from purpura. A tumour formed suddenly in the thigh, and another in the lower part of one arm on the inner side, at a part corresponding to that affected in my patient: and in connection with this latter, numbness of the little finger and outer side of the third finger was experienced; after death (which was from meningitis) the tumour of the arm was found to consist of altered blood so embedded in the biceps muscle as to press decidedly on the ulnar nerve.

bably from plugging of the vessel), as there was then sudden numbness in the thumb and two first fingers, although this symptom might have been quite independent, as it might have resulted from some cerebral disturbance, or from some condition of the nerves independent of any peculiar state of artery. What the date of the commencement of the aneurysms of the coronary arteries might have been, is quite problematical; but I am strongly impressed with the idea that they had the same origin as the condition of the arterial branches of the arm,* and that all arose from plugging up of the vessels by fibrin carried thither from a distance (from the valves of the aorta or its inner surface, or from some part of the lining of the left auricle or ventricle).† The antecedents of the case point to a condition of blood in which such a state of things would be likely to be favoured (I allude to the generally weak ill-nourished and cachectic state, the rheumatic tendencies, &c.), and this appears to receive confirmation from the existence of the fibrinous "blocks" in the kidney and the state of the orifices of the heart, and the plugging of the cerebral vessels (thrombosis), which was found to have existed. As regards this latter state, the thrombosis,

* A very interesting case is related by Dr. Crisp (at p. 46 of his work on the *Diseases and Injuries of Blood-vessels*) of a man, aged 21, who had an attack of rheumatic fever, after which "the bellows-sound was always heard over the cardiac region, the heart's impulse being greater than natural." Five years after the attack he became suddenly affected with a pain in the middle of the upper arm, after complaining of pain in the chest. Pulsation ceased in the arm below the axilla. Throbbing in the arm and tingling and numbness of the fingers followed. The artery of the arm became painful on pressure, and a touch produced tingling in the middle and index fingers, and there was a feeling of deadness along the outside of the forearm. The patient died; and in addition to pericardial adhesions, hypertrophy of the heart, and disease of the valves of the left side of the heart, the sigmoïd valves were beset at their margin with so-termed "vegetations." Immediately below the origin of the two profunda arteries the brachial artery was found to be enlarged to the extent of three-quarters of an inch; after which it became contracted, and the enlarged part was found to contain a hard fibrinous coagulum of the circumference of a goose-quill, quite adherent to the sides of the artery; the contracted part was quite impervious. This case is quoted by Dr. Crisp as one of arteritis; *but I believe it to have been one of embolism with tendency to aneurysm at the part of the artery where the plug was situated.*

† Absence of *recent* granulations affords no argument against the supposition of their having at some previous time existed.

it is interesting to note that the only important symptom referable thereto appears to have been the pain in the head which previously had existed; possibly also (as before said) the numbness of the hand, &c. may have been attributable to it.* It may be a question also, as before hinted, whether the extravasation of the blood in the arm was due to a rupture of an aneurysm which escaped observation, or was the result of congestion owing to interference with the local circulation by the aneurysmal enlargement? This question may also be asked regarding the extravasation of blood into the substance of the kidney.†

As regards the general subject of tendency to aneurysm of the cardiac coronary arteries (from whatever cause it may have arisen), it will be allowed that this occurrence is a most rare event. Dr. Crisp, in his work quoted in the foot-note, when citing no less than 551 cases of spontaneous aneurysms, does not enumerate a single one of these vessels. He, however, at page 21, refers to a case (see No. 93) of a woman in whom he found "the origins of the coronary arteries so much dilated as to resemble small aneurysms; one would admit a common-sized pea. The arteries were large, but not ossified." He informs me that he does not remember having seen any other cases. On looking over the sixteen yearly volumes of the *Transactions* of the London Pathological Society, I find but three cases bearing upon the subject. One was the case related by Dr. Bristowe (vol. vii. p. 98) of a sailor, æt. 22, who died in St. Thomas's Hospital, having been admitted for what was thought to be fever, fol-

* It may be remarked that we often have single nerves or sets of nerves affected by central brain or spinal disease.

† Dr. Crisp, in his work quoted on the opposite page, relates one case (but only one) of aneurysm of a renal artery (see Case 320 in his Table, p. 254). This is the case of fatal hæmorrhage which was supposed to have been owing to rupture of aneurysm of the renal artery, and was related at the London Medical Society (see the *Lancet*, 1829-30, vol. i. p. 388). Subsequently doubts were thrown upon the pathology of the case, and it was objected that it was really one of rupture of the artery without aneurysm. There was discharge of blood from the bladder for nine days. I find also an instance of aneurysm of the vessel mentioned in the "Observations on Aneurysm" published in 1844 by the Sydenham Society, as quoted from the cases of Dr. Donald Monro, physician to St. George's Hospital (see p. 132), the left emulgent artery being described as "dilated at its beginning to the size of a filbert-nut."

lowed by paraplegia and exhaustion (no symptoms referable to the heart having existed). After death, in the course of the vessels on the surface of the heart were found "a number of nodules, isolated and in strings, and individually, from the size of a pea downwards, the nature of which, at first sight, was not very apparent. Dissection, however, showed that they were due to aneurysmal dilatations occurring in the course of the trunks and branches of the coronary arteries." The walls of these aneurysms consisted "for the most part of dense fibroid tissue." "All those parts of the walls of the coronary arteries and their branches which were undilated appeared to be perfectly healthy, and free from atheromatous deposit." The muscular walls of the heart and its valves were quite healthy. Patches of extravasation of blood existed in the lungs, and the cortical parts of the kidneys were thickly studded with buff-coloured patches, and with dark-red coloured masses, owing to hæmorrhage. *The pericardium was healthy.*

The second case which I find in the Pathological Society's *Transactions* was brought forward by Dr. Peacock, and was that of an intemperate butcher, æt. 51, who died in the Royal Free Hospital in 1847 (see vol. i. of the *Transactions*, p. 227), having suffered from symptoms of bronchitis, and having been in a half-comatose state. Though carefully examined, the heart presented no indications of disease until the day before death, when he had pain in the præcordia, and when a "peculiar flapping sound accompanying the action of the heart, but distinct from the ordinary cardiac sounds, was loudly audible along the course of the sternum and towards its left side." After death, the pericardium was found distended with pale yellow-coloured sero-purulent fluid and lymph of soft consistence, and an almost spherical aneurysmal dilatation of the anterior branch of the left coronary artery existed. The artery between the sinus of Valsalva and the aneurysm was rather dilated, and converted into a complete cylinder of bone, but was quite pervious; the aneurysmal sac was also ossified, but to a less extent; the right coronary artery was dilated, and in places ossified. The heart's walls on the right side were thickened, those on the left side thinned. This case of Dr. Peacock's was also republished by

him in the *Monthly Journal of Medical Science*, March 1849, in a communication wherein he gives short notices of the cases of aneurysm of the heart's coronary arteries which he had found placed on record. He had found *only two*, which were fully reported; and imperfect notices of only two others. Of the fully-noticed cases the first one was published by Bougon, in the *Bibliothèque Médicale*, 1812, t. 37; the second was published by Peste, in the *Archives Générales de Médecine*, 1843. The remaining two, the imperfectly reported cases, were published one by Hedland, and referred to by Otto in his *Compendium of Pathological Anatomy;* the other by Merat, in the *Dictionnaire des Sciences Médicales*, tome v. p. 484. For all details I must refer the reader to these cases as given by Dr. Peacock, merely noticing one or two salient points which they present. For example, in the case by Bougon, the patient for four years before death had suffered severely from pains in the chest, with a sense of suffocation and inability to sleep, the attacks commencing about eleven or twelve o'clock at night, and continuing till the morning. During the attacks some ease was obtained by walking rapidly, or suspending himself by the arms. Not long before death the cardiac symptoms disappeared during an attack of fever, but recurred as usual. The patient used also to have pain in the middle of the left arm, but never cough or expectoration. The cardiac and radial pulsations were isochronous, sometimes feeble, at others strong and intermittent. He died suddenly, in an attack of pain, passing rapidly along the course of the spine to the back of the head. After death, the pericardium was found to contain two pints of blood, partly coagulated, which had proceeded from an opening in an aneurysm of the right coronary artery, which was also very dilated. The opening through the walls of the aneurysm into the pericardium was unequal, soft, reddened, and very lacerable, as if gangrenous.

In the case of Peste's, the patient, æt. 77, had enjoyed good health until two years before death, when he was seized with apoplexy, followed by hemiplegia on the left side. He had no cardiac symptoms of any kind until four days before death, when he vomited his food, and afterwards felt some indisposition, with dyspnœa, and præcordial pain at times very severe. He died quite suddenly. After death, the

pericardium contained coagulated blood, and was distended with serum. The anterior wall of the left ventricle was found lacerated through its substance in a somewhat transverse direction; at a short distance from the origin of the left coronary artery there was a patch of extravasated blood, which was traced to a rupture in the walls of a small aneurysm of that vessel—a probe introduced into the lacerated opening on the surface of the ventricle penetrated into its cavity between two of the fleshy columns, and could also be passed into the sac of the aneurysm. The aneurysm was of the size of a large nut, and was situated on the left coronary artery, at the point where it divides into its branches. It contained laminated coagula, and presented an aperture inferiorly by which the blood had escaped; its coats around this point were very thin. The vessel was dilated to the size of the brachial artery, and its coats were studded with bony plates. The right coronary artery was free from disease, and the heart's substance and its valves natural, but the coats of the aorta were readily lacerable, and contained osseous scales.

The third case, viz. that by Hedland, occurred in a man æt. 40, and death arose from hæmorrhage into the pericardium, owing to the giving way of the sac. In the remaining case, that related by Merat, the aneurysmal pouch, of the size of a small nut, arose from an "erosion of the coronary artery," and was formed in the thickness of the parietes of the left auricle. There had been no symptoms of heart-disease during life.

On reviewing all the six above-mentioned cases, including my own, it is worthy of remark how little interference with health this grave affection of aneurysm of the coronary artery had, on the whole, produced; and it is also worthy of observation that, in four out of the six cases, the aneurysmal sac had given way into the pericardium.

When Dr. Peacock made the above-mentioned communication, in 1849, he remarked that he had examined most of our London Pathological Museums, but had not found a specimen of aneurysm of the coronary artery in any of them. A specimen existed in the Museum of St. Bartholomew's

Hospital, which was formerly described as one of such an aneurysm; but Dr. Thurnam had shown that it was in reality an aneurysm of the sinus of Valsalva. Since that time up to the present, Dr. Peacock tells me he has not seen references to any other cases.

Dr. Duckworth informs me of a specimen, now in the St. Bartholomew's Hospital Museum, of dilatation of a cardiac coronary artery, "blocked up with clot in parts, in a specimen of fatty heart, which ruptured its left ventricle in three places." He says it could not be called an "aneurysm, I believe, and the sinuses of Valsalva are not affected." This specimen was described in the Pathological Society's *Transactions*, by the late Dr. Baly (see vol. iii. p. 264), who speaks of one branch of the left coronary artery (running from the base of the left ventricle towards the centre of the degenerated muscular wall of the heart) as being enlarged to the extent of three-quarters of an inch from its origin, being prominent on the surface of the heart. All its coats were thickened and opaque, yellow and rigid, and its cavity filled with firm dark coagulum. "This dilated portion of the arterial branch ended abruptly, and its canal could be traced no further; it seemed to be obliterated at the very margin of the degenerated part of the ventricle." The aortic valves in this case were thickened; but there is no description of any fibrinous masses being attached thereto, and Dr. Duckworth says that in the preparation no appearance of anything of the kind at the present time exists.

I will now refer to instances, sufficiently rare,* which I have met with in our literature, of aneurysm or dilatation of the coronary arteries of the heart. These are almost all from foreign sources; and although it is possible that many cases of so-called spontaneous hæmorrhage into the walls of the heart's cavities may have had origin in the yielding and laceration of dilated arterial branches, otherwise diseased or not; and though possibly so-termed aneurysm in the muscu-

* Harrison, in his work on the *Surgical Anatomy of Arteries*, when speaking of the coronary arteries, quotes the words of Bertin, who remarks: "The coronary arteries are frequently diseased, but aneurysm of them is rare. They are subject to inflammation and calcareous deposits. In hypertrophy of the heart they have been found much dilated."

lar walls themselves (I don't, of course, allude to mere sacculations of the walls, or pouches) may in certain cases be attributable in the first instance to dilatation of arteries,—yet I shall, in my quotations of cases, lay stress upon such as are patently and undoubtedly examples of aneurysmal sacculation of these vessels, though in one or two instances I shall allude incidentally to the more doubtful kind of cases.

To proceed with mention of cases from foreign authorities, which include, however, one or two cited from our own English periodicals, I would first refer to a case of Professor Heuse of Lüttich (related in the *Presse Méd.* 1856, 34),* as it presents interesting points of resemblance to the one which I have related. The patient, aged 21, having had 3 attacks of tertian fever, had been ailing 3 months. There was swelling of the face, pallor of the mucous membranes, œdema of the legs, dyspnœa, and hydrothorax. The urine was not albuminous, nor were the heart's sounds remarkable. After death about a pint of coagulated blood was found in the pericardial cavity. The tissue of the heart was pale and softened, and under the visceral layer of the pericardium were fine small "thrombi," one of which was ruptured. The heart's cavities, valves, and vessels were natural. Of these thrombi,—"blutherde," "noyaux ou foyers sanguins,"—3 were on the left and 2 on the right ventricle, and one had spontaneously burst and given rise to the hæmorrhage. They were found to be aneurysmal dilatations of branches of the coronary arteries; and one of them was surrounded by fibroïd substance in the walls of the ventricle, apparently the result of former extravasated blood, owing to the giving way of an arterial branch. The aneurysmal sac which had burst was the largest of all, measuring from 0.012 to 0.015 mm. in diameter. Excepting the branches on which the aneurysmal sacs were situated, the vessels of the heart were natural.

In the *Archives Générales de Médecine* (tome xiv. 1847, p. 195), Dr. Aran has brought together the particulars of several cases of rupture of coronary vessels of the heart in a communication entitled "Observation sur la dilatation et la rupture des vaisseaux coronaires du cœur, pour servir à

* See Schmidt's *Jahrbücher*, p. 165. 1857.

l'histoire des ruptures de cet organe." He commences his paper by alluding to the peculiar position of these vessels, their relation to the organ which impels the blood, and their consequent exposure to all the vicissitudes and troubles of the central organ of the circulation; he afterwards refers to the observations of Norman Chevers on the remarkable anatomical structure and functions of the coronary vessels,* by which they are enabled to resist and sustain the efforts of the blood, to reinstate themselves, or regain their proper length after their elongation, and to be distended laterally at the same time. He states that a great number of the cases of lesion of the coronary vessels are consecutive to a graver and more profound lesion of different parts of the central organ; but that dilatation and rupture of these vessels of themselves menace the individual with sudden and rapid death. He looks upon this lesion as probably being more common than is supposed, and thinks that it is often overlooked owing to the small size of the dilatation and the incompleteness of investigation. He then recounts the cases which he has been able to collect of this affection. I do not propose to reproduce the particulars of these cases. I will only give the very briefest summary of them.

The *first* case was one described by Kramer in the *Commercium Litterarium*, h. 41, p. 324, 1732; the patient was a woman aged 78. She had been in the habit of being bled twice a year. On discontinuing this custom, she became subject to agitation at night and obtuse pains between the shoulders. She died suddenly, and after death rupture of one of the heart's coronary vessels was found.

The *second* case, related by Fischer in the *Acta Physic.*

* See the *Guy's Hospital Reports for* 1843, p. 103. The principal object of Dr. Norman Chevers' paper is "to show that, in the structure of their tunics the coronaries really differ in a very remarkable degree from all other vessels of their size; and to attempt to assign the causes upon which the peculiarities of their construction depend;" the coronary arteries deriving their peculiarity from the remarkable development of a strong laminated fibrous structure, which, at the expense of another tunic of the vessel, exists between the internal and middle coats; as in the case of the aorta and some of its branches. He points out how the coronary arteries resemble the large superficial veins of the heart in the arrangement of their subserous and middle coats.

I will here, by the way, allude to the fact that Brücke made some inter-

*Med. Acad. C. Leopold*, 1740, tome v. p. 142, was that of a soldier who died suddenly, owing to hæmorrhage resulting from rupture of one of the branches of a coronary artery.

The *third* case, given in greater detail, was related by Bougon in the *Bibliothèque Méd.*, and was the same as that mentioned before as being quoted by Dr. Peacock.* He died suddenly with hæmorrhage into the pericardium, owing to giving way of the right inferior coronary artery, which was veritably "aneurismatique dans la longueur d'environ 1 pouce."

The *fourth* case was the one related by Peste, and quoted also by Peacock.† Aran proceeds to observe that in certain

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esting physiological observations and experiments upon the coronary arteries of the heart, as described in the *Sitz. Ber. d. k. Akad. z. Wien. Math-naturw.* Kl. xiv. 1854, and quoted in Schmidt's *Jahrbücher*, p. 299, 1855; by which it appears that, owing to the particular arrangement and disposition of the coronary arteries and veins, and their relation to the aorta, &c. the persistent filling of the arteries has the effect, during the diastole, of opening out the cavities of the heart, by which the blood is sucked in, and also probably of elongating the papillary muscles and giving them that proper direction, which they must have in order, when the systole of the auricle is passing into that of the diastole, precisely and certainly to close the auriculo-ventricular valve-flaps. It also appeared to Brücke that, owing to the origin of the coronary arteries from the sinuses of Valsalva, the blood could not enter into them during the systole, as, if it could, an obstacle to the contraction of the heart would be produced. Since then Hyrtl and Bojanowski have found, on examining the hearts of the calf, pig, &c. that in very many cases the orifices of the coronary arteries are not reached at all by the edges of the valve-flaps. Out of eleven human hearts, in four cases the orifices of these vessels could not be covered by the valve. These observations are quoted in Schmidt's *Jahrbücher* for 1864, p. 95; but it is observed by the reporter that even where the coronary artery orifices are covered, the blood still gains admission when the valve-flaps are in apposition with the walls of the aorta, inasmuch as between them a quantity of blood exists in the sinuses of Valsalva which finds its way into the open coronary arteries, as it is not only under pressure of the heart, but also under that produced by the elasticity of the aortic walls. And even if the entrance of the capillaries into the walls of the ventricles during their contraction is prevented, as Brücke thinks, by the pressure of the contracting muscle (which is denied), yet the capillaries of the *auricles* which are not contracting would receive blood during the systole. In the same place notice is made of the observations of Brücke, of Von Wittich, of Donders, and Kleefeld, who take opposite views to each other upon the functions of the coronary arteries.

* See p. 295, ante.

† Aran also alludes to the case described by Merat and quoted by Peacock.

cases of rupture of the heart wherein changes in the structure of the heart's walls have not been recognised as leading to the lesion, it may be that this lesion has followed upon interstitial hæmorrhage, which has weakened the resistance of the muscle.* He considers that we are deficient in our knowledge of the etiology, prognostics, and diagnostics of these aneurysmal dilatations, and that as to symptoms the only one which appears in a manner to have been almost constant is a singular pain along the vertebral column in the præcordial region. He laments that auscultation was not practised in those cases which he details.

He concludes his paper by relating five cases of dilatation and rupture of the cardiac *veins*, which he cites from divers authorities: cases even of course much rarer than those of similar disease of the coronary arteries. These cases I quote, as bearing indirectly upon the subject of this communication.

Of these the first case was that of a man aged 48, subject to dyspnœa and a dry cough, who died suddenly, owing to the giving way of a dilated coronary vein. All the coronary veins were found to be dilated, the heart being thin and fatty.

The second case was that of an old woman who had effusion into the pleural and pericardial cavities. A varicose dilatation of the cardiac veins, which had attained the size of the little finger, was found. The veins were very thin and fatty. These two cases are recorded by Albers of Bonn in the *Corresp. Blatt. Rhein. u. Wertfäll Aerzte*, 1844, No. I. Aran suggests that the dilated condition of these veins might have resulted from interference with the pulmonary circula-

* Norman Chevers (op. cit.), after speaking of calcareous deposits in the walls of coronary arteries (p. 109) closing more or less their calibre, and causing dilatation of the less rigid parts which may even rupture, speaks of permanent dilatation of the vessels as being produced by undue distension and of their becoming generally widened or assuming a varicose state. The occurrence of ruptures he thinks mostly dependent either upon inflammatory softening or ulceration of the inner tissues of the vessels. One of the most frequent causes of dilatation of coronary arteries he considers to be a deposition of fat within the interstices of the muscular tissues of the heart, which produces a diminution of the capacity of the minuter capillaries and consequent dilatation of the larger branches, the heart's tissues becoming pale, softened, and atrophied; hence one of the most frequent causes of rupture of the heart.

tion and consequent stasis of blood in the heart's cavities. In connection with this point I would call to the reader's mind the fact, that all the cardiac or coronary *veins* terminate in the *right* auricle.

The third case, reported by Dr. David Maclagan, is quoted from the *Lond. and Edin. Monthly Journal of Medical Science*, June 1845, p. 421, and given at considerable length. A lady, aged 75, always having enjoyed good health, became suddenly pale and collapsed, but experienced no pain, only some distress at the chest. She died in an hour's time, and it was found that two small ruptures of the heart had occurred in the anterior surface of the left ventricle. One of these lesions was found by Dr. Goodsir to be connected with one of the coronary veins, and it appeared probable that the hæmorrhage into the pericardium which was found, *was owing to rupture of this vein, and perhaps to that of some small arteries.* The heart was above the normal disease, but not hypertrophied as to any of its parts.* This case is quoted in Braithwaite's *Retrospect of Practical Medicine and Surgery*, vol. xii. p. 61; and the editor in commenting upon it, after speaking of the rarity of such cases, observes that "those which bear the greatest analogy to it are described by Cruveilhier under the head of apoplexy of the heart, and that Dr. Cormack also alludes to similar cases."†

The fourth case, quoted by Aran, was described by Dr. Carson in the *Lond. Med. Gazette*, vol. xiv. 1834, p. 472. It was that of a robust man, aged 52, subject to dyspepsia, who was suddenly taken with extreme weakness and præcordial pain, followed by pain at the chest and vomiting. No stethoscopic signs could be discovered. He died on the day after, suffocated. The pericardium was found distended

* In his description of this case, I find that Dr. Maclagan observes that he was "strongly impressed with its probable affinity to that of the lamented Dr. Abercrombie." But he remarks, "the chief differences between this case and that of the late Dr. Abercrombie seem to have been the less rapid escape of blood into the pericardium, and the rupture being on the anterior surface of the heart."

† Aran suggests the probability of rupture of the veins, and perhaps of the coronary veins, in the two cases of "hémo-péricarde" which Lieutaud quoted from Baader and Frambesarius (*Biblioth. Anat. Med.* obs. 660 and 668); and in the cases cited by Baillie in his *Pathological Anatomy.*

with blood; but the surfaces of the heart and pericardium showed no trace of rupture of any of the vessels, a small ecchymosis only being found at a level with the origin of the pulmonary artery. Dr. Carson, I find, quotes other cases from Baillie, Alston, &c. in which the pericardium has been met with distended with blood, supposed to have been poured out *without rupture* of any vessel. He considers that the exudation must have arisen from exudation, owing to a peculiar state of the blood and relaxation of the fibres.

The fifth case, related by Dr. Fitzpatrick in the *Lond. Med. Gazette*, vol. xviii. p. 295, was that of a soldier, aged 40, who was subject to difficulty of breathing; he suddenly fell down, and died. After death the pericardium was found to contain a pint of serous fluid, and the heart to be covered with a very thick fibrinous layer, weighing altogether a pound and a half. No solution of continuity was observed on the surface of the heart, and no trace of inflammation in any part.

This and the former case are considered by Aran as being probably due to rupture of veins, and perhaps small arteries. He concludes his paper by dwelling forcibly on the supposition that ruptures of the heart may be, in some cases, referable to alterations in the coronary vessels of the heart.* And whilst referring to Aran's suggestions on this point, I will take occasion to quote here one or two cases of rupture of the substance of the heart associated with positive and undoubted rupture of branches of the cardiac arteries. Their relation may, at any rate, help the mind of the reader to dwell upon this suggestion and to realise its probability.

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* I have just been informed by Dr. Crisp that in his opinion "atheromatous deposit has not so much to do with the production of aneurism as many pathologists suppose; the deposit often takes place, to a great extent, after the enlargement of the arterial tunics." Two cases of rupture of the heart, in which thrombus of a coronary arterial branch was met with, are quoted in Schmidt's *Jahrbücher* for 1864, Bd. 123, No. 3, p. 297. In one case (related by Soulier in the *Gaz. d. Hôp.* p. 27, 1863) the rupture is of the posterior surface of the left ventricle, but the thrombus is in the right coronary vessel, not completely filling its calibre. In the other (related by Malmsten in the *Hygien*, xxvi. 1861, p. 629) the rupture is also of the left ventricle; but it is the anterior branch of the left coronary vessel, which was, near the softened part, occupied by an old thrombus that in one place presented a puriform appearance.

Thus, in the *Journal de Bruxelles*, Jan. 1859,* a case is related by Feigneaux of spontaneous laceration of the upper part of the heart and of the coronary artery, which was dilated. The case was that of a man, aged 57, who, otherwise in good health, experienced headache, weakness of the limbs, and thirst, a few days before death. After vomiting he had unpleasant feelings at the region of the heart, and unconsciousness, followed by dyspnœa and cough. On examination after death, in addition to the lesion above described, about three pints of coagulated blood were found in the left pleural cavity.

Again, I find that, in a report on the Klinik of the civil and military hospital at Geneva, Dr. Lombard, in the year 1857,† among other cases, describes one of sudden death from rupture of the left coronary artery, occasioning extensive extravasation of blood into the tissues around the aorta and other large vessels at the base of the heart. The patient was a woman, aged 44, who had been subject to palpitation of the heart and difficulty of breathing. After exertion, shortly before death, she was affected by pain in the chest, attempts at vomiting, and distress at the præcordial region.

He also describes a case of aneurysmal sac *in the walls of the heart* communicating with the left ventricle; and also a similar one in the substance of the left ventricle associated with abnormal communication betwixt the left ventricle and the left auricle. No mention is made of the state of the coronary arterial vessels; but it is possible, I would suggest, that these sacs in the substance of the heart's walls may have been the result of distension or aneurysmal dilatation and rupture of branches of these vessels.

Returning from the digression which I have made in quoting cases of dilatation of the coronary veins and rupture of the heart, apart from aneurysm of the coronary arteries, I would remark that I have found little or nothing on the latter subject amongst the writings of English authors beyond the cases already alluded to. From inquiry amongst those whom I know personally, I have only heard of two cases

* See the *Prag. Vierteljahrschrift f. d. Prak. Heilk.* 1860; *Analekten*, p. 31.

† See Schmidt's *Jahrbücher*, p. 83, 1837.

of the kind, and they were mentioned to me by my friend Dr. Chadwick of Leeds, who informs me that he "distinctly remembers hearing of two cases of aneurysm of the coronary artery of the heart,—one in the practice of one of his colleagues, and the other in or about the hospital;" but he only spoke "from hearsay and memory."

JOHN W. OGLE, M.D.

P.S. Since writing the above, I have met with the following notice of aneurysm of the coronary artery. It is quoted from the *New-York Journal of Medicine* in the *Dublin Medical Press* (see July 4th, 1860, p. 4).

(*Abstract.*)

Dr. Clark.—A young man, aged 30, a free drinker, died suddenly, soon after midnight, in the street. Had never complained of shortness of breath, could run up-stairs without difficulty, and never had rheumatism. The pericardium contained blood. There was no rupture of the heart, nor was there any aneurysm of the aorta. On "tracing the left coronary artery from its origin outward into the first fibres of the heart, running a distance of perhaps half an inch, the pair of forceps closed, was allowed to come into the pericardium, and examining the point where it had made its exit, there was a pretty extensive opening, a laceration of that coronary artery, perhaps three-fourths of an inch from its origin. *There was no evidence upon the specimen that there had been aneurysm of this coronary artery.* The pericardial sac contained possibly about 12 or 14 ounces of blood." There was a small amount of atheromatous deposit in the aorta.

Dr. Markoe remarked that it did not seem to him that the coronary artery could be in a normal condition, and such a result be brought about. He thought it would be interesting to dissect it out very carefully and ascertain accordingly. He referred in connection to a beautiful specimen of aneurysm of the coronary artery in the Museum of the New-York Hospital. It was removed from a lady who died suddenly while engaged at her dressing-table. The aneurysmal sac was about as large as the end of the little finger, with a rupture at one point, thus allowing blood to escape into the pericardium.

Dr. Wood did not remember to have heard of a case of rupture of that artery without disease. Some years ago he met with an aneurysm of the coronary artery, about the size of a marble, which ruptured into the pericardium, while the man was in congress with a prostitute of this city. In this case atheroma existed, both in the aorta and in the artery itself.

Dr. Clark did not think it probable that in his case the artery was free from disease; but its coats were so stained with the colouring matter of the blood, that it would be impossible to determine the fact until after maceration.

For copying out the above quotation from the Dublin journal I am indebted to Dr. W. D. Moore, who had access to the work, which, owing to our London Libraries being shut, I did not possess.

## XVII. STATISTICS OF STRANGULATED HERNIA.

*Some Facts in reference to Strangulated Hernia, founded on a Record of 200 Cases in the Book kept at St. George's Hospital.*

In the first volume of these Reports I made use of our *Records of Amputation* to illustrate some facts bearing on the causes of death after that operation which seemed capable of elucidation from statistics. In the present communication I propose to use our book of *Operations for Strangulated Hernia*, in order to contribute information on some of those points connected with that subject which can hardly be judged of from the experience of any single surgeon, however extensive it may have been. This book has been kept on a plan similar to that of *Amputations*, with only such variations as the differences of the subject required. The form of the hernia, its duration, the duration of strangulation, the contents of the sac, the result, and in fatal cases the cause of death, together with such peculiarities in the case as the registrar thinks worth noting, are among the main points specified. The list extends now to more than 240 cases; but for convenience I have tabulated only the first 200.

Of these 200 all were of the three common varieties—femoral, inguinal, and umbilical. The deaths in the whole number of cases were 70, or rather more than one-third.

### INGUINAL HERNIA.

I will first speak of inguinal hernia. The strangulation of this form of hernia is by no means so rare in our experience as it has been represented by some writers to be in general. Of the 200 cases, 68, or more than one-third, were inguinal. Four only of these 68* patients were females.

* Perhaps more strictly 67; for two operations were performed on the same patient.

*Age at the time of operation.*—The age of the patient is an important feature in strangulated hernia, and particularly in the inguinal variety. It occasionally happens, although very rarely, that a congenital inguinal hernia becomes strangulated in infancy so obstinately as to require operation.* Four operations were performed in infancy, all under the age of 7 months. In one of these the hernia did not appear to be of the congenital form—at least the testicle was not seen in the sac.

Between early infancy and late puberty the strangulation of a hernia is extremely rare. Only two such cases occurred—one of a common oblique hernia at the age of 4, the other of a congenital hernia (congenital in both senses of the term) at the age of 14.

We now come to the period of life at which that form of hernia occurs which has been so forcibly described by Mr. Birkett,† as being caused by a protrusion of the bowel into the congenitally-open funicular process of the peritoneum, as occurring "in the earliest infancy, throughout childhood, and during early adult life;" as passing at once into the scrotum, and as liable to rapid and acute strangulation. The occurrence of such cases is indisputable, and the experience of any one who has had much practice in hernia must have enabled him to verify Mr. Birkett's description; but to judge from our experience the proportion must be small. We have already seen that the cases in early infancy and childhood were very few—only six in number under 15 years of age. Four of these were of the common congenital form. One of the others (No. 14)‡ was clearly of the slowly-forming variety, and the result of constant coughing, the infant dying of bronchitis. In the sixth (No. 118), which occurred at the age of 4, the hernia might have been originally such as Mr. Birkett describes; but it had lasted for four months before strangulation, and no opinion can be pronounced on the

* The rarity of this occurrence is shown by the fact that during the whole period (thirteen years) of the establishment of the Hospital for Sick Children, no operation for strangulated hernia is known to have been performed. The few strangulated herniæ which have been admitted have become reducible by the application of ice.

† *System of Surgery*, iv. 295-302.

‡ Throughout this paper the Nos. refer to the *red-ink* continuous Nos. in the book; not to the No. in each year, which is written in black ink.

point. Between the ages of 15 and 20 four cases occurred, in all of which the hernia had existed a long time—in none less than a year. From 20 to 30 years of age there were 11 cases. Of these the two following may fairly, and with great probability, be classed with those which Mr. Birkett describes. No. 12, occurring at the age of 21, containing fluid and inflamed intestine, and the sac having a very long neck. No. 174, in which the age was the same, and the characters were very similar, except that the sac contained some omentum; the occurrence and strangulation of the hernia appeared to be simultaneous. Perhaps also Nos. 188 and 200 were of this nature; but this is doubtful. The total number of cases occurring below the age of 30 is 21, against 47 which occurred above that age.

Between 30 and 40 there were 9 cases; between 40 and 50, 11 cases; between 50 and 60, 18 cases;* between 60 and 70, 8 cases; and above 70, 1 case. In almost all the instances occurring in later life the hernia was of some standing, and generally of old date, the following being the exceptions: No. 104, a direct hernia at the age of 45, strangulated on the sixth day after its first appearance; No. 132, a recent oblique hernia, æt. 54; No. 133, a recent oblique hernia in a female, æt. 38; No. 151, a bubonocele, strangulated on the first day of its existence, æt. 65; and No. 173, also a bubonocele, strangulated on the fifth day of its existence, æt. 62.†

In our experience, therefore, the acute and sudden strangulation of a recent inguinal hernia has been a rare event, and no period of life has appeared to be specially exposed to it.

*Result of the operation.*—The operation for inguinal hernia is, on the whole, attended with better success than that for femoral hernia, no doubt in consequence of the strangulation being less acute, and less protracted, in the majority of cases. Of the 68 cases 19 died, not much more than one-fourth;

* Two, however, were in the same individual after the interval of a year.

† I have spoken throughout of the age of the patient at the date of operation. I have not sufficient confidence in the accuracy of dates for things long past to go into the question of the time of first occurrence of the hernia.

while of 126 cases of femoral hernia 47 died, considerably over one-third.

*Causes of death.*—Of these 19 deaths several were from causes unconnected with the operation. Thus 2 (Nos. 69 and 144) were dying at the time of the operation; 2 others (Nos. 14 and 171) died of diseases quite independent of hernia, viz. bronchitis and fatty heart; 1 (No. 50) died from hospital phagedæna attacking the wound long after he had recovered with an artificial anus. In the other 13 the causes of death were as follows: peritonitis, 8—Nos. 51, 52, 73, 91, 121, 143, 146, and 154: in the last case the gut had been bruised by violent taxis. Injury to the gut, 3—Nos. 7 (perforated) 122, 140: the two latter evidently from violent taxis. Pyæmia, 1—No. 193. Diffuse cellular inflammation, 1—No. 192. And sudden collapse from wound of an artery in the operation, 1—No. 189.

*Time of strangulation.*—As to the duration of strangulation, and the effect of this circumstance on the result of the operation, we have the following information:

Out of the 68 cases no less than 30 were operated on twelve hours or less after the occurrence of strangulation. Of these 7 died. The proportion of deaths is below the average of the entire list, yet not so much so as we should have expected. But this is easily explained when we come to look at the causes of death. Of these 7 cases, 3 died from irreparable injury to the gut, caused in two instances (or, perhaps, in all three) by the violent efforts made to return the gut. In a fourth instance the accidental wound of an artery in the mesentery in incising the stricture was the cause of death. In the remaining 3 cases peritonitis was the cause of death; but in one of these (No. 154) there were marks on the intestine of the bruising which it had received from forcible taxis.

In the latter half of the first day of strangulation there were 13 cases with 4 deaths. One of these deaths was accidental, from fatty heart; a second from diffuse inflammation of the scrotum; the other two from peritonitis. Thus 43 cases were operated on in the first day of strangulation; and there can be little doubt that the successful practice of St. George's Hospital in the matter of strangulated hernia is mainly due

to the rule, now universally followed here, to operate as early as possible. Of the 25 cases which remain 9 were operated on on the second day, 6 on the third, 7 on the fourth, 1 on the fifth, and 1 on the sixth. The date of strangulation in the remaining case is accidentally omitted in the book. Of these 25 cases 8 died, 2 being in a moribund condition when operated on.

On the whole we are justified in saying that our experience supports the general and growing conviction that there is less risk in early operation than in any less decisive measure, and that if cases of strangulated inguinal hernia were gently handled in the efforts at taxis, and operated on early when such gentle attempts had failed, few of them would die.

*Contents of the sac.*—The nature of the contents of the sac is another subject on which statistical information is available. There is a general impression that strangulation is rare in inguinal hernia of slow formation, unless the gut be implicated in the folds of an omental protrusion. It is allowed that in rapidly-forming herniæ, such as those spoken of by Mr. Birkett, intestine alone may protrude, and may be strangulated at once; but it is thought that in slowly-forming herniæ the omentum is the chief obstacle to reduction. Our experience on this point goes to negative a belief in the frequency of such an obstacle, though no one can doubt its reality as an occasional cause of strangulation. Out of our 68 cases, there were 5 in which the sac was not opened, and 2 in which the notes as to the contents of the sac are wanting. Excluding these 7, we have 61, of which the presence of omentum with intestine in the sac is noted in 21 only: in one there was omentum with fluid only; in the other 39 there was no omentum—at least the description of the contents of the sac, though minute and apparently careful, contains no reference to it. I can hardly imagine that many cases have occurred in which so important a point has escaped notice. I can answer for my own practice as Surgical Registrar (which includes 87 out of our 200 cases), that I never omitted to note this point carefully in cases which I saw myself, and to inquire specially with reference to it in cases operated on in my absence; and I have no reason to think that my successors were less particular. I believe,

therefore, that though the omentum may be the obstacle in some cases, we must seek elsewhere for the efficient cause of strangulation in the general run of inguinal herniæ.

The presence of large intestine in the sac is decidedly rare. It is noted only 5 times, in 4 of which the hernia was on the right side.

*Side.*—Inguinal hernia is strangulated more frequently on the right than on the left side. Out of our 68 cases there were only 23 on the left side.

*Form of the hernia.*—In 6 of the 68 cases this point has been omitted. In 3 it was direct (1 female), in 2 it was of the "infantile" variety. Both of these were young men, one 19, and the other 32. In the former the hernia was known to have existed from infancy, and in the latter for twenty years. No less than 15, or nearly a quarter of the whole, were of the congenital variety. The ages at which these persons were operated on, and the length of time during which they were known to have been ruptured, is given in the following table:

*Table of Cases of strangulated congenital Inguinal Hernia.*

| No. in Book. | Age. | Known duration of Hernia. | Result. |
|---|---|---|---|
| 2 | 24 | 15 years . . . . . | Cured |
| 3 | 23 | As long as he could remember . | Cured |
| 7 | 14 | All his life . . . . | Died |
| 29 | 50 | "Old rupture" . . . . | Cured |
| 43 | 14 months | All his life . . . . | Cured |
| 60 | 54 | Unknown . . . . . | Cured |
| 69 | 3 months | From birth . . . . | Died |
| 73 | 3 months | From birth . . . . | Died |
| 80 | 58 | Four months . . . . | Cured |
| 82 | 33 | 27 years . . . . . | Cured |
| 91 | 60 | Not noted. Had been operated on 15 years previously . . | Died |
| 128 | 27 | Four and a half years . . | Cured |
| 143 | 40 | Five years (a bubonocele) . | Died |
| 152 | 19 | Two years. . . . . | Cured |
| 166 | 43 | 30 years . . . . . | Cured |

It appears from this, that out of 15 cases of strangulated hernia of the congenital form requiring operation, only 3 were infants, and only 1 other below the age of 19; that there was a pretty clear account in 4 cases of the origin of the hernia at the ages of 17, 22, 35, and 57 respectively; and that in the one which originated at the age of 35, the gut had not descended into the scrotum when it was strangulated at the age of 40. The mortality was about the same as in the rest of the cases.

The other 42 cases appear to have been of the common form. Three were in females. In 4 the strangulation took place before the gut had reached the scrotum (bubonocele).

*Effect of age on result.*—As to any effect which age may have on the ultimate event of the case, I own that I am doubtful. I have endeavoured to show, that in cases of amputation the mortality, *cæteris paribus*, varies with the age; but this, though it might perhaps be true in hernia also, were cases of hernia more homogeneous, is so interfered with by other more potent agencies that our present information, at any rate, gives no certain result. Of the 4 cases which occurred in infancy 3 died, and 1 of the 2 which occurred in childhood. The 15 operated on between the ages of 15 and 30, all recovered. Of 30 cases operated on between 30 and 50, 4 died. Of 27 operated on above 50, 11 died. This bare statement would suggest that, after the earliest years, the mortality decreases—to increase again with advancing life; but the statement of the causes of death, as given above, weakens this conviction, leading us to the conclusion that the causes of death in herniotomy are, as a general rule, independent of age.

### UMBILICAL HERNIA.

During the whole of the thirteen years involved in this table,* only 6 cases of umbilical hernia were operated on; and of these no less than 4 proved fatal. The hernia was in all cases of old standing. Five of the patients were females, and all were past the prime of life, the youngest being 39 years of age. In 4 cases the sac contained omentum, which in 2

* It ought, however, to be remembered that during a continuous period of about twelve months the notes were neglected by a previous Registrar.

instances formed a complete sac for the intestine. Of the 4 fatal cases, in 1 the patient was dying at the time of operation; in another he died of low pneumonia. In the remaining 2 cases, peritonitis was the cause of death; but in one of them the heart was also diseased.

The advanced age of the patient (who is generally a woman, and has had several children), the probable affection of viscera, and the presence of a large mass of omentum which has to be cut through or removed, as well as the unfavourable situation of the opening for the escape of discharges, sufficiently account for the fatality of operations for this kind of hernia.

### FEMORAL HERNIA.

The total number of cases of femoral hernia, out of the 200 operations, is 126. I will proceed to arrange the facts which our records disclose as to each of the chief particulars connected with the affection, on the same plan as was adopted for inguinal hernia.

*Sex.*—Strangulated femoral hernia in the male sex, though rare, is by no means so uncommon as strangulated inguinal hernia is in the female. Nineteen such cases are contained in our table, against 107 females. In the male, strangulated femoral hernia is a very fatal affection—11 out of these 19 having died. It is true that 2 of these deaths were wholly unconnected with hernia,—one having died of epidemic cholera, and another of strangulation of the small intestine inside the peritoneal cavity, when convalescent from the operation for hernia. In a third case, also, the death was due mainly to bronchitis. But even if we exclude these three cases from consideration altogether, the deaths will still be equal to the recoveries—8 of each; and, out of the 8 deaths, in 3 cases the gut was ulcerated or gangrenous (the duration of the strangulation being 36 hours, 3 days, and 5 days, respectively—Nos. 31, 37, 72), and in two of the others peritonitis had existed before the operation—as was proved by the post-mortem examination—death having occurred in one case 4 hours, in the other 12 hours, after operation (the duration of stricture being 36 hours and 5 days—Nos. 72, 141). We are entitled, then, to say that, as

might have been foreseen, femoral hernia, when it becomes strangulated in the male, proves even more dangerous than in the female; doubtless from the greater size, strength, and sharpness of the tendinous structures around the ring, and the relatively smaller size of the ring itself.

*Side.*—There is not that decided preference for one side over another in strangulated femoral hernia which we have remarked in strangulated inguinal hernia, though here also strangulation is more common on the right side. Out of our 126 cases, the side was not noted in two; 72 of the remainder were on the right side, against 52 on the left.

*Age.*—I have already expressed a doubt whether the mortality after herniotomy is much affected by the patient's age, and this doubt is not relieved by our present statistics. Femoral hernia is a disease of adult life almost exclusively. It rarely occurs under the age of 30, and hardly ever under 20.* Of the 126 cases recorded here, one only occurred in childhood to a girl of 8, who recovered; no others occurred below 20. Between 20 and 30, 5 cases occurred; one of them to a male, æt. 29, who was admitted with acute peritonitis, and died a few hours after operation. Of the 5 cases, 3 proved fatal. From 30 to 40 there were 18 cases, with 5 deaths; from 40 to 50, 31 cases, with 6 deaths; from 50 to 60, 36 cases, with 16 deaths; from 60 to 70, 28 cases, with 16 deaths. This gradual rise of the death-rate in the three last decades looks at first sight as if age had some influence; but such a conclusion is hardly compatible with the accounts of the post-mortem examinations, nor with the fact that above 70 there were 7 cases (one of an old man past his 80th year), and that all recovered except one—a woman, æt. 76, in whom the gut was ulcerated in the line of stricture.

*The period of strangulation* is, as a general rule, longer in femoral than in inguinal hernia. Two reasons probably combine to produce this result: 1. the sex of the patients rendering them generally more averse to consult a surgeon with reference to a tumour in this region; and 2. the small size of the swelling leading to its being frequently overlooked.

Accordingly, we find here a far smaller proportion of cases operated on in the first day of the strangulation; but

* Never, as far as I have seen, in the male sex.

we find the same rule to prevail in this as in the other form of hernia — viz. that, when operated on early, death is the rare exception; when late, it becomes the general rule. The following tabular statement will show this:

| Period of strangulation. | No. | Deaths. |
|---|---|---|
| Below 24 hours . . . . . | 15 | 1 |
| 1 day and below 2 days . . . | 30 | 8 |
| 2 days . . . . . | 29 | 11* |
| 3 „ . . . . . | 18 | 8* |
| 4 „ . . . . . | 11 | 5* |
| 5 „ . . . . . | 5 | 3 |
| 6 „ . . . . . | 5 | 2 |
| 7 „ . . . . . | 3 | 2 |
| 8 „ . . . . . | 4 | 3 |
| 10 „ . . . . . | 2 | 2 |
| Uncertain . . . . . | 4 | 2 |
| | 126 | 47 |

*Contents of the sac.*—The mortality of the operation depends in a great measure (in fact, excluding the ordinary accidents of surgical operation, we may say almost entirely) upon the state of the intestine or omentum contained in the sac. It becomes, therefore, interesting to know what the contents usually are; and whether the presence of omentum in the sac acts as a defence (as is often taught) to the intestine, or the reverse. The condition of the fluid in the sac is also a point to which more attention might be profitably devoted than it often obtains.

We will, in the first place, exclude 6 cases,—in 3 of which the sac was not opened, in 1 the note of its contents has been omitted, and in 2 it was found to be empty. All of these cases recovered, except one of the latter, in which the bowel had been ulcerated before its reduction, and gave way afterwards. The remaining 120 will be divided into the usual three classes: 1. those which contained fluid and omentum only (epiplocele); 2. those which contained fluid and intestine only (enterocele); and 3. those which contained both intestine and omentum (enteroepiplocele).

1. Of epiploceles we have 7 instances; in all the cases, except 2, the omentum was more or less altered from its natural appearance. Two died. In one case the strangu-

* One recovered with artificial anus.

lation had existed, it was said, for ten days, and she had had symptoms of peritonitis before her admission, of which she died; the other was a very feeble old woman (said to be only 58 years of age, but looking more like 70), who was too feeble to leave her bed, and in whom bed-sores formed and proved fatal.

2. Of enteroceles we have 70 examples out of the 120; so that it appears in the first place that the most usual condition is that in which small intestine alone is protruded. In one exceptional instance only was the gut a portion of the large intestine. The condition of the intestine, as well as can be judged from the descriptions (which are necessarily very brief), was as follows: In 6 cases it was visibly gangrenous; but only 3 of these died, the other 3 having recovered with artificial anus. The gut in all 3 cases was slit up and attached to the wound. Two of the patients were under Mr. Pollock's care, the other under the care of the late Mr. Johnson. I am under the impression that, in the last case at least, the artificial anus closed; but the point is not noticed in our records. In 5 cases of simple enterocele the gut was ulcerated in the line of stricture. Four of these died. In the fifth case the perforation, which was small, was surrounded with a ligature, and the patient did perfectly well. There were 17 cases in which the intestine was visibly inflamed; and it is a remarkable circumstance that only 5 of these died, and in all 5 cases the inflammation had gone on to gangrene. In not one single instance of these 17 was the return of the inflamed bowel into the peritoneal cavity followed by fatal peritonitis, except in those where the gut mortified. In order to complete the list of unhealthy appearances of the intestine, it must be added that in one case of protracted strangulation (No. 165), the bowel, though it was not judged to be absolutely gangrenous, was congested, and suspiciously mottled. The patient died of the collapse of prolonged obstruction. In two cases the gut was thickened by old inflammatory action in the hernial sac; of these one (who had been operated on seven years before) died. In one case, which recovered, the gut was bruised by forcible taxis. There remain 38 cases (more than one-half of the whole number) in which the morbid appearances in the intestine

were only those of congestion more or less advanced, according to the period of strangulation. Out of these only 9 died, and one of these was a man, who might be expected to die from any operation, being exhausted by old bronchitis. On the whole, of 70 strangulated enteroceles, 23 died.

3. The remaining 43 were enteroepiploceles; and of these 21 died, showing that as a general rule the presence of omentum in a strangulated femoral hernia increases the dangers of the case. In fact, the presence of omentum would appear to afford a new obstacle to reduction, and a new tissue, whose morbid conditions may prove a source of danger. The omentum itself is but rarely found in a healthy condition. Out of the 43 cases, the omentum appears to have been healthy in 6 instances only; and in one of them the intestine was inflamed. Only 1 died. In the great majority of cases the omentum was either obviously consolidated by old inflammation (probably during a long period of detention in the sac), or in a condition of chronic congestion barely to be distinguished from the former, and hardly admitting of reduction into the belly. Of the 37 cases in which the omentum was thus changed, the intestine was "healthy," or "congested," or (in one case) bruised by the taxis, in 26; yet of these 26, 11 died—nearly one-half; a striking contrast to the 39 similar cases in our last category, of whom less than one-fourth died.* There remains a large proportion of the cases where lesion of the intestine had become visible, and these cases were frightfully fatal. Of 6 cases in which the gut bore traces of inflammation,† 4 died (one, however, of epidemic cholera). Four are recorded where the intestine was ulcerated, and 1 in which it was totally gangrenous. All proved fatal.

Thus it will be seen that our statistics go to prove, with reference to the presence of omentum with gut in the sac of a strangulated femoral hernia, that while it introduces a new element of complication from the strangulation of a new tissue, probably previously diseased, it does not appear to

* It is true that of these 11 deaths one was caused mainly by renal disease, and one by bronchitis; but one of the 9 deaths in the other class was caused by chronic bronchitis.

† In 2 of these cases violent taxis had been used.

diminish the risk of lesion to the bowel in any appreciable degree, and on the whole much increases the danger.

As to the character of the fluid contained in the sac, we find here also in the records of strangulated femoral hernia more distinct evidence of the violence of the constricting force than in inguinal hernia. Out of our 126 cases of femoral hernia, the fluid is noted to have contained blood in 31 cases, to be "dark" or "sanious" in 7, mixed with lymph in 3, with pus in 1, and with the contents of the bowel in 2; showing altogether 44 in which the fluid deviated strikingly from its ordinary serous character. Out of the 68 cases of inguinal hernia similar conditions of the sac are noticed only 19 times, the fluid being "bloody" in 14 cases, "turbid" in 1, and "dark" or "sanious" in 4.*

*Causes of death.*—The total number of deaths amongst these 126 cases was 47. The causes of death show in a striking manner the formidable nature and rapidly-fatal character of the affection, and loudly testify to the danger of any delay in our attempts to relieve it. Of the 47 deaths 9 were caused by total gangrene of the intestine; 8 by ulceration of the gut and perforation in the line of the stricture; 1 by inflammation of the gut, which after death was found in an incipient condition of gangrene; 4 by collapse, the patient being in a moribund condition when operated on; 17 by peritonitis existing in 6 cases before the operation, and in 2 others induced by violent taxis; 1 by erysipelas; 1 by exhaustion and bed-sores; and 6 by accidental causes. I shall say a few words on each of these heads. 1. Gangrene of the intestine is usually of course, but not always, the result of protracted strangulation. In 3 out of our 9 cases (or, counting the case in which the gangrene was incipient, in 4 cases) the gut was not visibly gangrenous at the time of operation, but sloughed after it was reduced. The period of strangulation in these cases was 36 hours, 2 days, and 3 days respectively. In the other 6 cases, where the gut was visibly gangrenous, there were 3 cases of flagrant neglect, where strangulation had

* I hope I shall not appear presumptuous in hinting to future Registrars that the character of the fluid ought always to be noted when the operator is able to specify it. It is an important element in prognosis. Vide Birkett in *Syst. of Surg.* iv. 254.

been allowed to persist for 6 days, 8 days, and 10 days respectively. But in the other 3 cases the period of strangulation was only 3 days in 1, and 2 days in the other 2. We see therefore that when the stricture is tight, even a period of strangulation usually regarded as moderate may lead to mortification of the whole of the small knuckle of intestine contained in the sac—a powerful argument against temporising with these small tightly-constricted herniæ. 2. Still more powerful is the argument to the same effect derived from the frequent occurrence of ulceration of the gut in the line of stricture, produced generally by the pressure of the sharp edge of Gimbernat's ligament. This cause of death is peculiar to femoral hernia—at least we have not as yet noted its occurrence either in inguinal or umbilical. The mischief commences on the mucous surface of the gut; it is often quite imperceptible on its exterior, and always extends further on the mucous than on the serous surface. Hence it is often invisible at the time of operation, and it frequently proceeds to perforation a considerable time after the reduction of the hernia.* The period of stricture requisite for the production of this ulceration is not necessarily long. In one only of our 8 cases was it as long as 5 days, 4 days in another, 3 days in 3 others, 2 days in 2 others, and only 36 hours in the remaining case. The gut gave way at the time of the operation, or immediately afterwards, in 6 of the 8 cases (Nos. 15, 31, 59, 72, 183, 197), leading to fæcal extravasation into the peritoneal cavity. In the other 2 cases the perforation did not take place till the opening had been fenced off by adhesions. 3. With respect to the collapse which precedes death in cases of unrelieved strangulation, it generally requires a good many days for its production, and is then usually connected with gangrene of the intestine; but it is in rare cases produced much earlier by the constant vomiting and pain of unrelieved stricture, as in No. 177, where the strangulation had existed only for 2 days. In the other 3 cases, where the patient died from

* In one of our cases (a very remarkable one, No. 24) the gut had been reduced before the operation, which was an exploratory proceeding only, and displayed the sac empty. Yet some days afterwards the surgeon was surprised to see fæces escaping from the wound. The patient gradually sank, and after death the gut was found to have been ulcerated in the line of stricture.

neglected stricture,* its duration was 8 days in 2 of them, and uncertain in the third. 4. Peritonitis in most cases appears to be chiefly the result of inflammation spreading from the injured bowel after its return into the general peritoneal cavity, and is therefore in some sense produced by the operation. But there can be no doubt that in many cases, and in more, I think, than is believed by some surgeons, peritonitis exists before the operation. But on this head I would refer to the paper which follows this, entitled "Remarks on two Cases of Strangulated Hernia." 5. I will only, in conclusion, remark on the miscellaneous or accidental causes of death. Among these there were some entirely unconnected with hernia—viz. cholera, bronchitis, internal strangulation, and the administration of chloroform.† But in 2 cases (Nos. 105, 159), death was due to the wound of some vessel near the seat of stricture, which was certainly not an abnormal obturator artery,‡ and which eluded post-mortem examination. This is an accident which has been mentioned by various writers.

This review of the causes of death after femoral hernia will, I think, convince the reader that they are in a great degree preventible by the simple plan of operating at the earliest possible moment, before the intestine has sustained fatal injury.

Finally, with respect to the general mortality after herniotomy at this Hospital, I believe it will be found to be below that which is shown by the records of other institutions. I need not say that we do not claim this as the result of any superiority in our surgical treatment. The principles of the treatment of hernia are, I hope, the same at all the great surgical institutions of this metropolis. They have been much simplified since I first became a student of surgery. If the symptoms of strangulation (as distinguished from mere incarceration) are well marked, and if the gut will not yield to moderate taxis under chloroform, the operation is at once

* I am speaking here of cases where the gut was not gangrenous.

† The death in No. 185 is reported to have been produced by matters vomited, while she was insensible from chloroform, finding their way into the trachea.

‡ Those acquainted with our Museum will remember that it contains a preparation in which the obturator runs round the neck of the sac, and has led to fatal hæmorrhage. Ser. ix. No. 84.

performed. After the operation no purgatives are given, except on clear indications for their administration, whatever the duration of the constipation may be. The success which has attended our practice we believe to be due in the main to our seeing the cases at periods somewhat earlier than is usual at hospitals situated amongst a different class of patients and of private practitioners. Still the facts which precede show only too clearly how great room there is for improvement in this respect, and how many lives might be spared, if medical men were consulted earlier in these cases; and if when consulted they would make it a rule never to pay a second visit to a patient with strangulated hernia, unless for the purpose of operating. If the strangulation be not exceptionally tight or of very long duration—in which cases perhaps even an attempt at taxis is unadvisable—moderate and well-directed pressure should no doubt be tried for a short time. This having failed, the patient should be placed under chloroform without loss of time, either at his own house or the hospital, and taxis be again tried prior to the operation. In voluminous herniæ, particularly inguinal, the application of ice in the interval appears useful, and is harmless in any case.

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APPENDIX.—Though not, perhaps, immediately connected with my present subject, I will add a very few words on the operation without opening the sac. An impression appears to prevail that this operation is repudiated at St. George's Hospital. Such, however, is not the fact. It has been practised occasionally by most of the surgeons ever since I remember the Hospital. Speaking for myself, I would say that I do not attach the importance to the mere abstaining from incision of the peritoneal sac which some surgeons do, as a means of reducing the total mortality of the operation, since that depends mainly, as I have tried to show, on causes independent of, and in fact anterior to, the operation. But in cases of recently strangulated hernia, where the symptoms are not extraordinarily acute, I think it desirable to attempt reduction without incising the sac, simply because I can see no

reason for such incision. Our experience of the operation has certainly been very favourable. The previous pages contain allusion to 8 cases—5 of inguinal and 3 of femoral—of which only one died, and that from causes quite unconnected with the hernia—viz. diffuse inflammation and suppuration in the scrotum. Since the time comprised in the above statistics 6 other cases have been so operated on, making in the whole 9 of inguinal and 5 of femoral hernia, with only one death, and that due merely to an accidental complication equally incidental to any kind of wound. In most of these cases the strangulation was very recent; but in one it had lasted 3 days, and in two others 2 days.

T. HOLMES.

# XVIII. TWO CASES OF STRANGULATED INGUINAL HERNIA;

## WITH REMARKS.

THE two cases which follow made a considerable impression upon me, in consequence of their occurring within a few days of each other, and presenting a remarkable contrast. In the first, the gut, which was irreducible, was injured by too protracted taxis. It gave way at the operation; the rent was sewn up, the bowel returned into the peritoneal cavity, and the patient recovered. In the second, the bowel, although it was perfectly reducible, was allowed to remain unreduced for three days by some strange negligence of the medical attendant, who never applied the taxis at all. This set up peritonitis, which went on to a fatal issue, in spite of the prompt reduction of the hernia.

CASE I.—George H., æt. 33, was admitted under my care on September 23, 1866. He had been ruptured for six years, and had always worn a truss. The rupture had come down under the truss, while he was lifting a heavy weight, and symptoms of strangulation soon came on. They had lasted about twelve hours when he was admitted. He applied to a medical man, who placed him in a warm bath for half an hour, and then made manual attempts to reduce the hernia, for two hours according to the patient's account. On examination there was found a large inguinal hernia on the left side, quite destitute of impulse; the countenance was anxious; and the man suffering greatly from pain in the abdomen and from constant vomiting. The operation was at once proceeded with. On cutting into the sac, a small quantity (about ʒij.) of bloody fluid escaped. There was a coil of small intestine about six inches in length intensely congested; the stricture was very tight. I did not notice any bruise or other lesion of the intestine. The stricture having been pretty freely divided (after which the gut was seen to lose a good deal of its congested colour), I proceeded to pass back the intestine. This was attended with no extraordinary resistance, considering the size of the coil, nor was any undue force used, when suddenly the contents of the gut gushed out from a part on the convex border of the intestine, and which was not

being handled at all. On examination a rent was found through which the forefinger could have been easily passed into the bowel. A straight needle and fine silk suture was taken, and the rent sewn up with six points of the uninterrupted suture, care being taken to carry the suture well beyond the rent on both sides. The silk was then divided near the knot, and the whole returned into the belly. The treatment after the operation consisted in the administration of a grain of opium every four hours for the first day, and then twice a day, with no food at all, nor any liquid, but merely fragments of ice to suck, until mid-day on the 25th, when the man complained so much of hunger that I allowed him to have a pint of strong beef-tea, to be taken in the form of two tablespoonfuls every two hours, which, as he jocosely observed, was "rather better than nothing." He had no morbid symptom whatever after the operation, except occasional flying pains in the abdomen, probably from wind, the abdomen being rather tympanitic. The bowels acted on the 28th, and he was then allowed ordinary diet and the opium omitted. With the exception of some trifling (and transient) erysipelatous redness of the scrotum, he did perfectly well, and the wound healed in about a fortnight. He was discharged cured on October 22, having been fitted with a more serviceable truss.

CASE II.—Geo. A., æt. 27. This man was admitted a few days after the former—viz. on Sept. 26, 1866. He had had an inguinal hernia, apparently of the direct form, for several years. Like the other man he had always worn a truss; but as in his case, and as we see so often among the poor, the truss was worse than useless, as it allowed of the descent of the hernia, which came down below it, and became strangulated three days before his admission. He also applied at once to a medical man, who, unlike the former, made no attempt to reduce the hernia. On admission there was found a hernia about the size of a walnut in the right groin. It did not offer any impulse. He was suffering from constant vomiting, with dry tongue and anxious countenance. This was about midnight. I had him put under chloroform at once, believing that the hernia would be found so tightly strangulated as to render immediate operation inevitable; when to my surprise the gut slipped back with the characteristic gurgling sensation, almost on the first handling of the tumour. He was put to bed in the hope that the sickness and pain would subside on the reduction of the hernia. A dose of opium was ordered. Next day, however, all the symptoms were aggravated, and the tumour was as large and as tense as it had been the day before, but its appearance and consistence were different; the pain in the belly was greater; the vomiting constant. On consultation it seemed advisable to cut into the tumour. I was in no doubt that I had reduced the intestine on the previous night, nor had I the least apprehension that it was a case of 'reduction *en masse*,' as the replacement was effected easily, completely, and with the characteristic sensation. Again, the reappearance of the tumour was probably only due to the accumulation of fluid in the sac. Still, as the man was evidently

dying, it was thought right to make sure that the hernia had been completely reduced. On cutting into the sac, it was found filled with grumous pus, but containing no intestine or omentum. The finger was passed through the external ring, which was freely incised for that purpose, in order to search for the bowel which had been contained in the sac, it being suggested as possible that this might be constricted by some twist on itself. The coils of intestine could be felt adhering together by soft lymph, but easily separated; but there was no sensation of any constricted portion, nor could the gut recently contained in the sac be brought into view. The man died early next day. Post-mortem examination showed intense peritonitis and inflammation of the intestines, the serous coat of which was in many places partly separated from the muscular by incipient gangrene. The strangulated intestine was still perceptible, about four inches of the small gut, six inches distant from the ileo-cæcal valve, being intensely congested and of a purplish colour. The whole peritoneal cavity was occupied by a copious deposit of lymph and pus. There were no other morbid appearances worth notice.

I have thought these two cases worthy of record, partly on account of their rarity, partly on account of the practical lesson which they teach. I am not one of those who are fond of dwelling on other people's mistakes; but the things which are seen at public hospitals, in connection with the treatment of strangulated hernia, show the necessity which exists for more strict observance of rules in the treatment of this affection in private practice. I have no hesitation in saying that numerous lives are lost every year in London alone by a neglect of the most ordinary rule of practice; a neglect which it is only charitable to ascribe to ignorance. The ordinary rule to which I allude is that which I stated at the conclusion of the last paper—viz. that when a surgeon is summoned to a case presenting well-marked symptoms of strangulation, moderate taxis ought first to be tried, and then, without loss of time, chloroform should be administered, the taxis repeated, and, if it again fails, the operation should be at once performed. Now this rule was violated in the two cases before us, in opposite senses, and to the most extreme degree. In the first case, instead of moderate taxis, a most immoderate, dangerous, and nearly fatal amount of force was used; in the second, no taxis at all was employed, and the strangulation was allowed to continue three days under the medical attendant's eyes before he sent the man to the Hospital. As to the first patient's statement that the taxis had

been employed for two hours, strange as it may seem to those who are accustomed to handle tumours containing distended intestine with the caution that a tissue so easily injured requires, I do not myself disbelieve it. The man stated it as a matter of fact, being a perfectly intelligent person, and not making a complaint of it, or, indeed, knowing that there was anything remarkable about it. Instances quite as extraordinary of the *nimia diligentia* with which this and analogous surgical objects are pursued come every now and then under our notice.*

That in the instance before us the bowel had been partially ruptured, so that it gave way under gentle handling, there can, I think, be no doubt. Such partial rupture occurs in the form of a crack in the peritoneal coat;† the muscular coat next gives way, if the violence is continued, and, lastly, the looser and more extensible mucous membrane. Such lesions do not give rise to much hæmorrhage, and would be overlooked unless the precise point involved was carefully examined. In this case the lesion would no doubt have been visible if we had happened to look narrowly at that part of the coil of herniated intestine. There could be little hesitation as to what ought to be done. Two courses only were open; the one which was adopted, or the formation of an artificial anus. We have in our Hernia-book two other cases in which holes in the gut have been sewn up, and they both recovered without a bad symptom. In one, No. 36, of femoral hernia, the gut had been ulcerated by the pressure of the stricture, but the hole was small and the neighbouring part of the intestine looked healthy. In the other, No. 118, an inguinal hernia in a child of four, it is stated in the book to be uncertain whether the small hole in the intestine was the result of

* Those who are acquainted with our pathological collection will perhaps remember a preparation (ser. xii. 75) in which about a dozen false passages have been made,—the whole urethra so irritated that it "was in a state of slough from the external orifice to the prostatic portion," and death thus produced,—by the persevering efforts of a surgeon "for many hours" to introduce a catheter.

† This accident happened lately on the operating-table in the Hospital. The coil of bowel was large, and very much distended. Considerable manipulation was necessary to reduce it. In doing so, the surgeon distinctly saw, and pointed out to me, the peritoneal coat of the intestine crack. The man recovered, though I believe some severe symptoms followed the operation.

ulceration, or whether the gut had been touched by the edge of the knife. The hole in both was of such small size that it could be pinched up with a tenaculum and surrounded by a single thread. In my case, the line of suture was nearly an inch in length. But there were several reasons which made me determine on the course I adopted. In the first place, I was very unwilling to condemn a young man to the horrible condition to which he would be reduced if the artificial anus proved permanent; 2. the rent was in the long axis of the gut, and therefore the separation of the tissue included in the sutures would not materially narrow its calibre; 3. if the wound so made should not unite, but the suture should be discharged externally to the gut, there was good reason to hope that the inflamed part of the gut would be separated from the general peritoneal cavity by adhesion, and nothing worse than a temporary fæcal fistula would result.

The second case is one which opens up a very interesting question—viz. that of the frequency of peritonitis after strangulated hernia. It is usually taught—perhaps I should say it is usually assumed as a fact that requires no teaching—that peritonitis is inseparable from strangulation of a hernia, and that the vomiting, the distress, the dragging pain in the abdomen, the tympanitis, the dry tongue, and the rapid pulse, which we find in cases of advanced strangulation, testify to the presence of peritonitis. On the other hand, every hospital surgeon of experience must have seen cases of patients dying from neglected strangulation, and in whom obstruction, with its usual symptoms of pain, vomiting, &c. has lasted for more than a week; yet where the patient, dying either without operation,* or immediately after operation,† has shown no post-mortem appearances of general peritonitis. Hence another theory has arisen, which Mr. Hutchinson has stated with his usual clearness, and advocated with his usual power, in a paper "On the chief Cause of Death after Hernia Operations," in the second volume of the *London Hospital Reports*. In this very able paper, Mr. Hutchinson adopts the following view of the case: 1. That peritonitis is very rare (he does not say unknown) before the return of the

* As in Mr. Hutchinson's case, *Lond. Hosp. Rep.* ii. 110.

† As in the case in our Hernia-book, No. 23.

gut, even though strangulation may have persisted for a long period. 2. That, on the other hand, it sometimes occurs after the reduction of a herniated bowel by taxis, and often after its reduction by operation; and is a main cause of death in herinotomy. 3. That therefore it is probable, if not proved, that the cause of the peritonitis in such cases is the reduction of inflamed bowel into the peritoneal cavity, from which, as from a centre, inflammation radiates over the general serous surface. Mr. Hutchinson from these premises draws the conclusion, that in cases where the gut is much damaged it is better to leave it in the sac after dividing the stricture. I am not prepared either to admit Mr. Hutchinson's facts unreservedly, or to deny them entirely—a position very disadvantageous for a disputant. I am quite free to confess that there are cases of acute strangulation, in which the patient will die of the mere collapse, without any inflammation of the general peritoneal membrane. I will also admit that many patients who are said to have peritonitis before the operation have really nothing more than obstruction, for the symptoms of the two are similar, if not at the commencement identical. Yet I will maintain that there are many—I think a large proportion of cases—in which peritonitis really does exist in strangulated hernia before reduction, as it certainly did in the case before us. Mr. Hutchinson says, and with truth, that a tight stricture is similar to a ligature tied round the bowel, and instances Mr. Travers's experiment, in which he drew a loop of intestine out of the peritoneal cavity of a dog, and tied it up with a tight ligature. The animal did not suffer from peritonitis. Mr. Hutchinson infers that the same may be the case in total strangulation. But are there not plenty of cases like the one here recorded, in which the strangulation is not really total, where the obstacle to reduction is at first merely in the patient's negligence (or, as in this instance, I am sorry to say the surgeon's), but which afterwards became irreducible from the development of gas in the intestine, or from inflammatory changes in the gut or omentum? Are not these cases more analogous to a ligature tied loosely on the prolapsed intestine, which Mr. Hutchinson allows would produce diffuse peritonitis? However, on a point like this *à-priori* arguments are of little use, and the

proof must be sought from post-mortem examination. We have recorded in our Hernia-book up to the present time 19 cases in which the patient died in less than a day after operation. In 1 of these cases there was no post-mortem examination; in 10 there was peritonitis; in the remaining 8 it either did not exist, or is not mentioned. In 2 cases it is possible that it might be masked by fæcal or sanguineous effusion into the peritoneal cavity, so that it did not attract attention.

If we analyse these cases a little further, we shall see that they throw great doubt on the doctrine that peritonitis hardly ever exists in strangulated hernia before reduction. Of the 18 cases (I omit the one which was not examined after death) all but 2 were femoral, and the great majority were tightly strangulated. In the 10 cases in which lymph was found effused in the peritoneal cavity, death took place in 1 case half an hour after operation, in another 2 hours, in a third 3 hours, in a fourth 8 hours, in a fifth 10 hours, in 3 cases 12 hours, and in the other 2 it is only specified as "the same day."* Now allowing all that Mr. Hutchinson has urged about the rapidity with which serous inflammations occur, we can hardly think that products variously described as "recent adhesions," "lymph," and "purulent lymph," could have formed in 3, 8, 10, or even 12 hours. So that I think I am justified in asserting that in all these cases peritonitis did exist before the operation, and was not set up by the reduction of damaged bowel into the peritoneal cavity. Further, it is worth notice that these 10 cases comprise all, except one, in which the stricture was of long standing. Two had been strangulated 8 days, one 7 days, one 6 days, one 5 days, one 4 days, one 3 days, two 2 days, and one 36 hours only. In the other 8, where no peritonitis was found, there was only one (No. 23) where the strangulation was of very long duration. In that case it had existed for 10 days.

* This expression, which I take to mean "on the same day of the week," would generally imply a few hours only after operation. If the operation were done, for instance, late on Wednesday night, and the patient died any time on Thursday, he would not in ordinary language be said to die on the same day. Now hernia operations are hardly ever performed early in the day, for a very simple reason,—viz. that the medical man has to see the patient before he is sent to the hospital.

After the operation (which preceded death by 7 hours) the fæces were found extravasated into the peritoneal cavity.*

I do not myself see how there can be any ambiguity or source of error in these facts; and they appear to me only explicable on the supposition that peritonitis does as a rule spread from the strangulated bowel in the hernial sac to the general serous surface after a certain duration of stricture. There are cases in which no such general peritonitis is ever produced up to the time of death. These Mr. Hutchinson believes to be the rule; I the exception. We both agree in thinking that the stricture is the obstacle to the spread of inflammation from the gut in the sac to the rest of the serous surface; only he regards it as an almost insuperable barrier, while I believe that it is usually passed in the later stages of neglected strangulation.

But while doubting Mr. Hutchinson's facts, I would altogether dissent from his conclusion. It appears to me supported neither by logic nor experience. His argument may be put thus, and I think without unfairness: "The inflammation is prevented from extending from the gut in the sac to the general serous surface of the peritoneum, so long as the hernia is strangulated, by the tightness of the stricture. Destroy the stricture, and so take away the barrier to the extension of the inflammation, and it will still not extend, if only you leave the gut in the sac." We cannot help asking why it should not, since the herniated gut is now placed in free communication, both by contiguity and by vascular supply, with the rest of the intestine. If we appeal to experience, we shall see, as I stated in the former paper, that in no less than 17 cases of visible inflammation of the gut in femoral hernia the intestine was returned into the belly, and that only 5 of these cases proved fatal, in all of which the inflammation had gone on to gangrene. Now if Mr. Hutchinson's view were correct, would this have been the case? If the only obstacle to the radiation of the inflammation is the stricture, should we not have had a much larger proportion of cases in which peritonitis would have proved fatal? But it may be said, in the 5 fatal cases of gangrene death might have been averted

* This might have masked the traces of peritonitis; but my impression is that there was really no peritonitis.

by leaving the gut in the sac. I greatly doubt it. In fact it appears to me that a natural confusion of ideas usually takes hold of us in speaking of the reduction of a herniated bowel into the peritoneal cavity. We are apt to imagine it something like dropping a ball into a bag, to move about freely where it likes. The real fact is, that the gut is pushed just beyond the ring, and stays there. If it is inflamed, it is in the majority of cases (which turn out well) fenced off in a very short time (perhaps not more than an hour or two) from the rest of the peritoneal cavity by adhesion to neighbouring coils, or to the parietes. If the subject be unhealthy, instead of these adhesions (plastic lymph), purulent fluid or semi-purulent lymph is secreted; the inflamed gut sloughs, and death follows. In such unfavourable cases precisely the same train of symptoms would, I believe, follow if the gut had been left in the sac, which *ex hypothesi* has been put in free communication with the rest of the peritoneal cavity. In the majority of cases where adhesions would form, the position of the inflamed gut in the hernial sac would be a very unfavourable one, leading to difficulty in the circulation of the fæces through it, and thus causing pressure on its already-inflamed tissues, and predisposing further to gangrene; or if adhesions form, leaving an irreducible hernia, with all its lifelong dangers. I must confess that all I have seen of hernia induces me to subscribe to the opinion of Aston Key, that in all conditions of the gut short of actual gangrene it is better to reduce it into the belly. However, I am quite ready to admit that the point is open to discussion as a problem in pathology; but whether Mr. Hutchinson's views or mine are more correct in that respect, they both point to the same rule of practice,—viz. that while all undue violence which can increase the mischief to the gut should be avoided, yet no delay should be permitted in replacing the bowel. As examples of the danger which follows on violations of this simple rule, I hope the two cases above quoted may not be without their value.

T. HOLMES.

Boston. &c.

# IX. A CASE OF CONVULSIONS OCCURRING AFTER DELIVERY;

## WITH SOME REMARKS SUGGESTED THEREBY.

Mrs. D., æt. 28, was on April 27, 1865, confined of her fourth child at 4 A.M., in the eighth month of her pregnancy. A midwife was in attendance, and the labour was perfectly natural. About two hours after the completion of labour she complained of pain at the epigastrium with headache, and vomited. At a little before 10 A.M., six hours after the termination of labour, she was seized with an epileptiform convulsion. Soon after this time I saw her. The tongue had been much bitten, the pulse was eighty beats in a minute, and there was slight but decided œdema of the legs. The convulsion having passed away, I administered 10 grains of calomel, applied a blister to the nape of the neck, ordered spirit-lotion to be kept continuously to the shaven scalp, and ¼th of a grain of tartarised antimony with ♏x. of Batley's sedative solution of opium to be given in liq. ammon. acet. every four hours. The convulsions recurred at first every hour, then every half-hour, then every quarter of an hour, during the day and night. The later attacks, though severe, were not so strong as the earlier ones. During the convulsions the pupils were contracted. On seeing her in the evening I found her with a pulse of 100. No urine had been passed since 12 A.M. (sixteen hours), *i.e.* four hours before the termination of labour. I therefore drew off with the catheter, carefully avoiding any admixture of vaginal discharge, half a pint of high-coloured water, of a sp. gr. of 1030, of acid reaction, and loaded with albumen. An examination of the urine under the microscope exhibited blood-globules, epithelium, and casts of the uriniferous tubes. I further ordered the scalp to be blistered, and a turpentine enema to be administered. The latter, however, was very clumsily used, and, beyond making her very sore, produced, I believe, no effect. When the convulsions would permit, she was ordered to have beef-tea and milk.

On the 28th, at 7 A.M., the fits ceased, and from that time there was no return of them. Only three doses of the medicine had been given, the convulsions preventing its repetition. She now lay in a semi-comatose state, just capable of being roused when spoken to loudly, but making no attempts at reply, nor seeming to comprehend any

questions put to her, and soon subsiding again into a comatose state. The pupils were naturally dilated, and responded to the stimulus of light. Pulse 80, and of fair strength.

29th, 7 A.M. Consciousness returned, but can remember nothing of her confinement. During the night she passed evacuations involuntarily three times, and urine once. At 7 A.M. she passed urine consciously, and knew that she wanted to have a stool, but had not sufficient power to retain it till the vessel was brought. She "has no pain anywhere." There is no hemiplegia; pulse 100; tongue coated; is thirsty; pupils act well.

30th. At 7 A.M. she became slightly incoherent in talking. Tongue furred; pulse 120, weak; pupils act well. She has now had no sleep since the return of consciousness, above twenty-four hours. From her manner I feared the accession of mania, and cautioned the woman attending to watch her carefully. She resumed the antimonial and opiate mixture. At 8 P.M. she was raving, and attempted to jump out of the window. I was quickly summoned, and found her in a state of acute mania. I ordered ℥xxx. of the liq. morph. acet. of the London Pharm. to be given; this, however, she resisted taking till a strait-waistcoat was put on. She then, finding herself helpless, took the draught. Her friends begged that the waistcoat might be left on, as they said they could not manage her without it.

May 1st. "She has had no sleep, and raved all night," was the report given to me. At 11 A.M. when I visited her she was somewhat more quiet, though still raving, and had taken some porter and beef-tea. Tongue furred; pulse 112: the waistcoat to be removed. The morphia was repeated in the evening.

2d. "Had a better night—an hour's sleep at a time;" and, "when awake, more herself." Tongue coated; pulse 100. A dose of castor-oil opened the bowels well, which had not been relieved since the night of the 29th.

6 P.M. Is quiet, but still incoherent. The morphia was repeated at night.

3d. "Had had a very bad night." Those in attendance had been obliged to have recourse to the strait-waistcoat again. At 12 P.M., when I saw her, she was apparently quite herself. She knows where she is, and says she is "sorry for being saucy." Pulse 88. The bowels have acted, and urine has passed freely. The night-draught was ordered to be repeated.

4th. "Had a very good night," and has been "comfortable" for the last twenty-four hours, but says she is "afraid to go to sleep, lest they should poison her." Tongue clean; pulse 92. At bedtime ℥xv. of liq. morph. acet. was given.

5th. Tongue clean; pulse 80; bowels well opened, and has passed a quiet night. Is sensible, but cannot quite divest herself of the idea of being poisoned on first waking from sleep, when she is very frightened.

7th. Urine clear, and contains no albumen, or a very slight trace.

Is quite sane and rational. From this time, with occasional headache, convalescence proceeded well.

29th. She still remembers nothing of her confinement or illness, though her memory is quite good on other matters.

I think this case may not be without interest, inasmuch as it may go to swell the amount of the comparatively few cases which I can find recorded of puerperal convulsions occurring after the completion of labour; and may also show what may be the course of such a case uninfluenced by medicine. All authorities admit the occurrence of these convulsions after labour has been completed, but few, as far as I have been able to ascertain, have recorded such cases. Cases of the kind, however, are, I find, recorded here and there, but very sparingly. A case under the care of Dr. Graily Hewitt is mentioned in the *Brit. Med. Journ.* for March 30, 1867. Professor Trousseau, too, in his admirable *Clinical Lectures* records another (*Clinical Med.*, translated by Dr. Bazire, part ii. p. 364). By all, however, the much greater frequency of eclampsia occurring in labour is allowed, as also its greater frequency in primiparæ. Dr. Cazaux says seven out of eight of puerperal convulsions occur in primiparæ. In two only out of thirty cases of puerperal convulsions recorded by Dr. Collins (I quote these figures from the lectures of my much-revered former teacher, Dr. Robert Lee) the seizure did not take place till after labour was completed, and of these cases twenty-nine were primiparæ. Of forty-eight cases related by Dr. Merriman, in six only did the convulsions not occur till after delivery. From these few statistics, and those of Dr. Churchill in his *Dis. of Women* (4th edition, p. 763), where from recorded cases of puerperal convulsions he draws the average of one case of eclampsia in $693\frac{3}{4}$ cases of labour, it follows that but few practitioners, on account of their allowed infrequency, see many cases of puerperal convulsions coming on after delivery.

So much as an apology for my touching upon what to many may seem a very trite subject. Trite, however, as it may be, and much as has been written on puerperal eclampsia generally, it seems to me that very different conclusions have been drawn by those writing upon the same subject, both as regards the causes and treatment of the affection in question.

Various and very opposed have been the causes assigned to this disease; some holding that those women who in early life have been either epileptic or hysterical are more predisposed to it than others; some, again, considering that such prior affections have no influence as a predisposing cause. Whilst some maintain that inordinate pressure upon the brain, either from rupture of some vessel, effusion of serum, or vascular congestion, is the exciting cause, others deem it to arise from "terror, depressing passions of the mind," and such-like.

Such, I believe, was the state of medical opinion on this matter till Dr. Lever first drew attention to the great frequency of the occurrence of albumen in the urine of those suffering from puerperal eclampsia; and this brings me to my case in point, as regards what I believe to have been its exciting cause. Dr. Lever was the first, I think, to draw attention to the fact of the frequent occurrence of albumen by recorded cases; but I believe I am right in saying that the suggestion of drawing off the urine in these cases with the catheter, so as to prevent any admixture of vaginal discharge, with a view to its being tested for albumen, is due to Dr. Gull. Dr. Lever says (*Guy's Hosp. Reports*, vol. ii. 1843), "in every case but one of puerperal convulsions that has come under my notice (since 1843) the urine has been found to be albuminous at the time of the convulsions;" and further, "I have investigated the condition of the urine in upwards of fifty women from whom the secretion has been drawn during labour by the catheter; great care being taken that none of the vaginal discharge were mixed with the fluid, and in no cases" did he detect "albumen, except in those in which there have been convulsions, or in which symptoms have presented themselves, and which are readily recognised as the precursors of puerperal fits." Now these statements, coming from a physician of Dr. Lever's acknowledged powers of observation and facilities for observing, must be accepted as facts as much as anything in medicine; for though it be true that cases do occur in which the urine, when tested for, has been found free from albumen, yet the frequency of puerperal eclampsia occurring in women whose urine contains albumen must be something more than a mere coincidence.

Mr. Candy has published a case (*Med. Times and Gazette*,

1860, vol. ii. p. 254) of puerperal convulsions coming on in labour, in which he tested the urine for albumen, and could not detect a trace; but, from his account, he did not test the urine till the second day after delivery, and therefore some time after the occurrence of the convulsions. Now, by all writers on the subject, it is allowed that the presence of albumen in the urine may be very transient, and that it may quickly pass away. In my own case, before recited, I regret much that the urine was not tested each day, to see when it really first passed away from that secretion; but in a week's time from the first testing for albumen the urine was found quite free from it. It seems to me that, to determine the perfect application of the test, whether albumen be present or not in the urine, this secretion should be tested at the time of the convulsions, or so soon after as to insure there not having been time for it to have passed away completely from that secretion. Nor will the absence of convulsion with the presence of albumen in the urine militate against the argument of cause and effect, any more than the presence of albumen in the urine, and yet the absence of convulsions in Bright's disease. It is not every person suffering from chronic kidney disease that suffers from eclampsia; but by all, when such a symptom does occur, the disease which gives rise to albumen in the urine, and causes the retention in the blood of effete matters, is allowed to be the cause of the seizure; neither is it in every pregnant woman whose urine is albuminous that eclampsia occurs. Why in one person with albuminous urine a convulsive seizure takes place, and not in another with the same state of urine, is one of those problems which at present cannot be solved. May not, however, the true explanation of this dissimilarity of symptoms arising in apparently similar states of disease lie in the application of Dr. Marshall Hall's theory, "that the proximate cause of puerperal convulsion consists in a morbid irritation of the true spinal system, and more especially of the medulla oblongata;" and that as we know the nervous system of some women is much more easily acted upon than that of others, so in one woman the morbid matter retained in the blood in albuminuria acts more readily on the nervous system, and produces a convulsive attack, whilst another, not so prone

to, or susceptible of, nervous impressions, altogether escapes? Does not this appear quite as probable, nay more so, as that the convulsion depends on a congested state of the brain, rupture of some vessel, or effusion of serum, "dyspepsia, or depression of mind," during labour, when such a pathological state is by no means constant on post-mortem examination? —those, even, who have endeavoured to explain the origin of the convulsive seizure by some such state admitting that in many cases examination after death reveals nothing abnormal to the naked eye.

When injury of the brain-substance, or a congested state of the vessels of the brain, is found after death, these are the effect, not the cause, of the seizure. Dr. Harley (*Med. Times and Gazette*, 1865, vol. ii. p. 651) believes that puerperal convulsions "are much more frequently the concomitants of true kidney-disease, rather than the result of the albuminuria of pregnancy"—an opinion, it must be noted, not held by most writers on the subject; but all will, I think, agree with him in "the chief cause of the convulsion being the retention in the circulation of the excrementitious urinary products." There can be no question, I imagine, that some poisonous substance generated by these excrementitious matters acting as an irritant to the nervous system is the cause of the convulsive attack. What this poison is seems still to be a *quæstio vexata;* and on this point it will be well to refer to one of those admirable and extremely original lectures of Dr. Bence Jones, originally published in the *Medical Times and Gazette* for 1865 (vol. ii. p. 701), but since in a separate volume, where the latest as well as earliest opinions touching this matter are stated.

If, then, as seems most probable, puerperal convulsions occurring in women whose urine is albuminous depend on an impure state of the blood, I conceive we can draw from this a very practical conclusion. It should be laid down as a rule that, upon the first threatening of convulsions—before even, if possible—in the puerperal state, the urine should be tested for albumen. We shall then have a certain guide for treatment, should albumen be detected in the secretion. That treatment will, then, vary somewhat in the different stages at which the convulsions may arise; but its aim must ever be

the freeing the system as much as possible from the morbid irritant. Before labour, our great trust would be in clearing out the bowels by purgatives and purgative enemata, and controlling and lessening the severity of the attack by the inhalation of chloroform, or, better still, by the combination of chloroform, ether, and alcohol, so ingeniously conceived and practically carried out by Mr. Robert Ellis. Should the convulsions continue in spite of such measures, the induction of premature labour may even be necessary, as in a case of Dr. Robert Lee, which under such treatment had a favourable issue. Should the convulsions occur during labour, much the same mode of medicinal treatment must be advocated; whilst for the induction of premature labour must be substituted the forceps if the child be living, craniotomy if dead, should it be considered desirable to hasten delivery. Lastly, in cases where the convulsions come on after delivery, purgatives, purgative and stimulating enemata, and the inhalation of chloroform, would appear to be appropriate treatment. In all perfect quietude must be insisted upon. On the regular and proper administration of suitable nourishment between the convulsive attacks, when possible, I should lay much stress, as the system must be greatly exhausted by the convulsions; and upon upholding this by every means in our power, whilst endeavouring to shorten the duration of the attack, must our greatest reliance be placed.

I have not, in these remarks on the treatment of such cases, mentioned bleeding, either general or local. General bleeding I believe to be inadmissible; local seldom easy of application, even if beneficial. Undoubtedly, if it can be ascertained that the albuminuria is recent, cupping over the loins, in the absence of a convulsion, followed by warm epithems, would be indicated, and possibly relieve; and the local abstraction of blood from the loins may be entertained, either as previous or after-treatment, according as albumen be present in the urine or not. But what I would contend against is the routine practice of bleeding in these affections; for one finds it suggested by theory, and carried out in practice in almost all published cases. Surely such a case as that before detailed, and the one related by Mr. Candy (loc. antea cit.) should make us hesitate before we have recourse to such heroic treatment.

In the promulgation, too, of this opinion, I am glad to find I have the valuable concurrence and high sanction of Professor Trousseau, who, in his lectures before alluded to, says: "I therefore do not include in the treatment of eclampsia general or local bleeding, intended to do away with this pretended cause (cerebral congestion) of puerperal convulsions." I have lately seen an opinion that "at the full period of gestation, a special tolerance for bloodletting, not found in any other condition," exists; but I think this is far, very far, from proved. From my own experience, I should hesitate to say that "excessive hæmorrhage seldom leaves behind any abiding anæmia," when it occurs during or after labour. That this may be true in robust women may be admitted; but I believe the contrary will hold good in the case of the woman with a weak muscular development, in whom, perhaps, we have most occasion to anticipate the excessive loss of blood at such a time. But, further, I do not think that any comparison can be accurately drawn from the effect of hæmorrhage during or after labour, and the effect of general bleeding at such a time. The one is a purely mechanical affair, depending upon imperfect closure of the uterine veins from one cause or another; but the withdrawing blood *pleno rivo* too frequently tells its own tale by an abiding anæmia, and its renewal is something more than mere mechanism. Flooding in or after labour is a purely accidental circumstance. Can we, then, possibly argue that nature takes into account an accident, and makes compensation for it? A patient of my own, indeed, in whose two labours there was flooding—in the last to such an extent that fatal syncope was every moment impending—has now suffered for five years from atonic dyspepsia, fostered, I believe, greatly by these floodings; and I doubt not but that others could tell of many a case of "abiding anæmia" from a similar cause. Nor do I think, if we look at the result of the published cases in which general bleeding has been had resort to, are we led to take a more hopeful view of such a plan of treatment. Can it be said that in any single published case of puerperal convulsion general bleeding has been conducive to the well-doing of the patient in the face of such cases as those of Mr. Candy and my own? I do not here take into account the case under the care of Dr. Graily Hewitt, as this was manifestly one in

which the very thought of bleeding could not be entertained, arising as the convulsions did in so anæmic a patient. Statistics are as yet of no avail in settling such a question, as the cases of puerperal convulsions in which a palliative plan of treatment, such as that by chloroform inhalations and purgatives, at present related, are so few; but, in my own mind, were statistics of cases treated upon this plan well tabulated, the result would compare favourably with that of those in which general bleeding was had recourse to. The better the pathology of these cases is understood, the less likely, I am convinced, will bloodletting hold that place it has hitherto in the treatment of this affection. To sum up, then: in cases of puerperal convulsions, examine the urine for albumen; if it be present, as a rule decide that bloodletting is inadmissible, but have recourse to chloroform inhalations and the treatment before advocated, bearing in mind the period at which the convulsion occurs.

My case, I think, is further interesting in the accession of acute mania, dependent, I believe, as first pointed out by Dr. Simpson, on the same state of urine, and its subsidence under the exhibition of morphia—a plan of treatment, I think, first urged on the notice of the profession by that admirable practitioner, the late Dr. Seymour.

Whether in these cases of puerperal convulsions there be really organic disease of the kidney, as Dr. Harley (loc. cit.) thinks, must be a matter for further research; the subject as yet, I believe, not having been sufficiently discussed with a view to the ascertaining of this point.

A. D. MACKAY, M.B.

# XX. INSTANCES OF SOME OF THE RARER VARIETIES OF MORBID GROWTHS, SWELLINGS, &c.

## CONNECTED WITH THE ORGANS CONTAINED WITHIN THE ABDOMINAL CAVITY.

I SUPPOSE that it will generally be conceded that, excepting certain cases of disease of the nervous structures, no affections are wont to cause such perplexity, in the matter of diagnosis, to the pathologist and the practitioner, as do ailments connected with organs situated within the belly. This was never so vividly realised by myself as it was in connection with a case of abdominal tumour which, some years ago, fell under my care, in conjunction with another medical man. The case was that of a lady who for some time had had a swelling at the right side of the abdomen; it was apparently somewhat oblong in shape, rather firm and consistent in character, and situated about five inches to the right of the umbilicus. She was in good general health, and did not appear to suffer from the presence of the tumour, excepting that it was slightly tender on pressure. From the history of the case it appeared at first sight most likely that the tumour was caused by an accumulation of fæcal matter in the bowel. As, however, nothing that could be suggested, including the frequent use of suitable enemata by means of the long O'Beirne's tube, seemed in any way to dislodge or move the mass, it was determined that the late Sir Benjamin Brodie should be consulted. Accordingly, after hearing all about the case and the treatment, he stated his belief that the best treatment would be found to consist in the persistent use of Brandish's solution of potash, judging from his experience of one or two cases of a somewhat similar nature which had come under his own notice. Accordingly this treatment was diligently adopted, and in the

course of time the tumour was reported to have entirely, but of course slowly, disappeared; no one having, I believe, come to any definite conclusion as to its exact nature.

The occurrence of this case made me especially observant of any abdominal growths or deposits which, during the time that I held the curatorship of the Pathological Museum, I had to examine post-mortem; and of such cases as presented themselves in my own hospital-practice. The consequence has been that I have, from time to time, culled from our hospital records, and from practice among the out- and the in-patients, a considerable number of such cases as illustrate difficult points of diagnosis in this class of affections, or present features of interest as regards morbid anatomy determined by post-mortem research. From these the cases which I now adduce form a selection. For the present I postpone several most interesting cases which have come under my own care within the last year among the hospital in-patients. These I hope to record at another opportunity, in conjunction with the histories of further cases from our hospital records; including especially a selection of tumours, cysts, morbid growths, &c. of the kidneys; also colloïd growths of the various abdominal organs; and cases of obstruction of the bowels, exclusive of herniæ; probably, also, cases of *hydatids* so called. Of course I do not propose to quote cases of ordinary cancer of the abdominal organs, of enlargements of the liver, ordinary forms of abdominal aneurysm, ovarian dropsy, psoas abscess, enlarged glands, fibrous tumours of the uterus, and the like, unless any special or difficult points in their diagnosis, or peculiarity as to microscopical character, &c., shall have presented themselves.

It will be observed that I have classed together my cases in the following order: I. Affections of the peritoneum, stomach, intestines, liver, pancreas, and lymphatic glands; II. Affections of the uterus and urinary bladder; and III. Affections of the bones, arteries, &c.

CASE I.—*Large tumour formed by thickening and tucking-up of the omentum, which was occupied by scrofulous deposit.*

Frances K., æt. 47, was admitted August 17th, 1843, and died Dec. 11th. No history of the case was obtainable.

*Post-mortem examination.*—The whole of the subperitoneal areolar tissue (visceral and parietal) was thickly studded with miliary tubercles. The large omentum was very much thickened by a similar deposit, and being tucked up, *formed a large tumour* situated to the right of the umbilicus, on a level with it. This tumour was united by recently effused fibrin to the anterior wall of the abdomen; and the various coils of intestine were similarly united. No ulcerations of intestine existed. Here and there was a small quantity of serum between folds of intestine, which had not been united, forming a *species of encysted dropsy.*

The left lung at its apex contained numbers of miliary tubercles and a vomica. Right lung and heart healthy. [54.]

CASE II.—*Distension by serum of the* smaller *omental cavity, which was converted into a shut sac by closure of the foramen of Winslow. Peculiar deposit beneath the peritoneum.*

John I., æt. 39, was admitted March 24th, 1841, and died August 26th. No history exists.

*Post-mortem examination.*—The peritoneum of the whole of the intestine, liver, and other organs, and also that lining the abdominal walls, was covered by a thick layer of fibrin, which could be scraped off; also beneath the peritoneum of the bowels and parietes a quantity of black material was deposited. The upper cavity of the omentum had been converted into a shut sac by a false membrane which blocked up the foramen of Winslow; and the cavity of this sac contained a quantity of straw-coloured serum. The liver, spleen, and kidneys were much diseased.

The left ventricle of the heart was much thickened; and much disease of the mitral valve and œdema of the legs, with fluid in the pleural and pericardial sacs, existed. [147.]

CASE III.—*Large mass occupying the centre of the abdomen, formed by hydatid cysts connected with the omenta. Cavity, lined by fibrin, and containing purulent fluid, formed by breaking down of these cysts. Purulent deposits in the liver; pus in the portal vein.*

Josiah S., æt. 38, was admitted Jan. 30, 1850. For many years he had not been quite well, and also had been getting large in the abdomen; but on the whole enjoyed fair health, until one week before admission, when he experienced severe pain in the region of the liver, epigastrium, and right shoulder. He had several times had rigors. When admitted, the skin was brownish yellow, and the abdomen was very large and hard, with rounded nodulated tumours, to be felt through the parietes, almost over its whole surface. Extensive dulness, continuous with that of the liver, extended very high into the chest, and passed across the umbilicus to the left iliac region, but nowhere could any edge be discovered; and though there was much softness, no positive fluctuation could be detected. There was some resonance in the left hypochondriac and iliac regions. The urine was

very dark and very albuminous. The conjunctiva yellow. Purgatives were freely given, and ether to alleviate a spasmodic kind of pain of which he complained; the alvine evacuations were very pale. Though in some respects he improved, the abdomen became larger. The albumen and bile diminished in the urine, but œdema of the legs came on, and then diarrhœa. He lost strength and flesh; and pain in the lower part of the abdomen was great. He finally became delirious before death, which occurred Feb. 2d.

*Post-mortem examination.*—The lungs were somewhat congested; the right one being much pushed up by the liver, which reached as high as the third intercostal space.

The great omentum was at its lower part adherent to the anterior wall of the abdomen. In the areolar tissue, between the layers of peritoneum, forming the lesser and greater omentum, were numerous cysts containing hydatids, which formed an enormous mass, occupying the whole of the central part of the abdominal cavity, and much displacing the viscera; the small intestines occupying chiefly the left iliac fossa. Behind the umbilicus, in the anterior and lower portion of the mass of cysts, was situated a large irregular cavity of sufficient capacity to contain a child's head. This cavity was apparently formed by the coalescing of several cysts, the interposed partitions having been destroyed. It was lined by a thick layer of false membrane, which gave great consistency to its walls, and it contained a thin yellowish purulent and very offensive fluid, in which floated many hydatids, apparently long dead. The remainder of the mass consisted of cysts containing hydatids, some ruptured and collapsed, others in various stages of development. The containing cyst-walls were in places almost of fibro-cartilaginous character. Isolated cysts also existed; as, for example, in the transverse meso-colon, beneath the peritoneum of the sigmoïd flexure of the colon, between the rectum and bladder, between the peritoneum and the fascia transversalis near the umbilicus.

The liver contained several small purulent deposits, slightly tinged with bile, and the *branches of the portal vein* also contained pus. Kidneys congested. Other organs natural. [35.]

CASE IV.—*Large sac, formed of fibrinous material and filled with fluid; situated in front of the intestines.*

Jane L., æt. 29, admitted May 8, 1850, with ascites and diseased liver. At first the swelling, as she said, had appeared to begin on the *left* side, where pain existed; and for some time she thought she had been pregnant. When admitted, the abdomen was enormously distended, and no resonance existed at its upper part, but it could be traced on either side towards the spine. Tapping had to be resorted to several times.

*Post-mortem examination.*—The cavity of the peritoneum was found lined by a tolerably thick layer of firmly organised lymph, which passed in front of the intestines and formed a sac, filled with yellow serum. Numerous slender bands of recent lymph were stretched across

the sac. All the abdominal organs were matted together, and bound down to the back of the cavity by old adhesions. [131.]

CASE V.—*Cysts filled with serum, formed by fibrinous laminæ intersecting the general peritoneal cavity, the results of peritonitis. Large cyst of the right ovary; smaller ones of the left ovary.*

Mary T., æt. 34, the mother of eight children, was admitted Oct. 19, 1853, with a swelling of the abdomen, which she said had been attended with most pain on the right side. The catamenia had been regular; she had had no illness. The abdomen was very generally and uniformly distended, and fluctuation was manifest; the resonance of the bowels always occupying the most prominent parts of the abdomen when she changed her position. There was no evidence of disease of the heart or kidneys. Under the use of diuretics and purgatives the abdomen was reduced almost to the natural size; and she left the hospital, but continued as an out-patient. On the 19th of October she became again an in-patient, having a very large abdomen, and suffering from pains therein, and from vomiting, with constipation. The resonance of the bowels was only to be heard very high up. Still there was no anasarca, and the urine was free from albumen though scanty. Paracentesis abdominis was performed, and much clear limpid fluid withdrawn. She went on pretty well for some days, until thirst and vomiting came on, and symptoms of some degree of peritonitis. She became low and depressed, and, in spite of certain favourable changes, sank, and died December 2d.

*Post-mortem examination.*—There was some œdema of the lungs behind, but the various thoracic organs were natural. The abdomen contained a large quantity of straw-coloured fluid, enclosed in spaces formed by fibrinous laminæ intersecting the peritoneal cavity; so that, in making a puncture into one of these, the fluid escaped from that space alone. The parietal peritoneum was lined by a thick layer of vascular false membrane. The intestines were contracted, and accumulated into a very small space in front of the spine. The kidneys were healthy; the liver small, with an opaque capsule. A large cyst, of the size of a fœtal head, was connected with the right ovary, and occupying the pelvic cavity: this was filled with dark gelatinous fluid and soft vascular solid masses. Several small cysts were also connected with the other ovary. [251.]

CASE VI.—*Peritonitis. Peculiar fetid grumous fluid, of uncertain origin, in the deep cavity of the peritoneum.*

Mary H., æt. 45, was admitted July 18, 1858, in a dying state, and suffering from great tenderness over the whole of the abdomen and sickness of three days' standing. The bowels had been confined, but had operated three days previously. No hernia could be ascertained to exist. She died in great suffering a few hours after admission.

*Post-mortem examination.*—The heart was very flabby, and a small quantity of atheroma existed on the anterior flap of the mitral valve. The other thoracic organs were natural.

The various coils of small intestine and the abdominal viscera were adherent to each other by recent adhesions, and the cavity itself (where not obliterated by other adhesions) was filled with a fetid grumous fluid much resembling the contents of the small intestine; and, as the adhesions in various parts of the cavity were broken down, this fluid oozed out from circumscribed cavities in the peritoneum, giving, at first sight, the impression that the intestine was perforated. This was, however, not the case, as the internal surface of the intestine, examined all the way from the stomach to the anus, was nowhere diseased, though the external surface was covered by lymph and inflamed. The subperitoneal areolar tissue was occupied by a peculiar deposit, of a strongly fetid odour, and of a grumous character, the origin and nature of which was uncertain.

The stomach and other abdominal and pelvic organs were quite healthy. [197.]

CASE VII.—*Enormous soft encephaloïd tumour, weighing 30 lbs., connected with the great omentum. A few nodules of the same connected with the mesentery. Other organs natural.*

John B., æt. 42, was admitted November 22, 1865, having had "a swelling of the stomach" six weeks. It appeared that he noticed it first in the region of the ilio-cæcal valve; and that it was not attended by vomiting, but was accompanied by some pain; the bowels having been regular. On admission, a large, soft, quaggy, ill-defined, smooth, superficial tumour, free from pain or tenderness, existed at the lower part of the abdomen. The urine was natural; the bowels were opened (the evacuations appearing as if they had been long retained), and the tumour seemed smaller afterwards; but they were sluggish, requiring strong purgatives. The belly became more swelled and tense, but the general health did not suffer. No fluctuation was found, but the whole anterior of the abdomen was dull on percussion (not otherwise, on change of position), the flanks being resonant. The distension became much increased by flatulence. On the 25th of January vomiting for the first time set in, and continued until death. He now began to lose flesh and to become unhealthy-looking; the bowels only acted by enemata. He sank, and died January 28th.

*Post-mortem examination.*—The thoracic organs were natural. The abdominal walls were adherent to a large mass beneath. After the adhesions had been removed, an enormous tumour of soft encephaloïd carcinoma was found occupying the whole front of the belly, extending from the diaphragm to the pubes. This was connected with the great omentum, and could be turned out of the cavity so as to display the viscera behind. The mass was divided into lobules, so that it had a very close resemblance (in appearance as well as con-

sistency) to the surface of the brain. It weighed 30 lbs. A few small nodules, varying in size up to that of a walnut, of similar material were met with in the mesentery, and attached, in some parts by pedicles, to various folds of peritoneum.

The other organs were natural. [32.]

CASE VIII.—*Quantity of a peculiar material, resembling degenerated fibrinous deposit, situated beneath the peritoneum, lining a large portion of the abdomen.*

Emma F., æt. 35, an intemperate woman, was admitted January 25, 1866. She had rheumatic fever fourteen months before, and since that she had been low and weak. She had been for two weeks suffering from sickness and dyspepsia, when, during the catamenial period, she was attacked with cold and was seized with pain in the region of the uterus; and, on admission, had much pain in the lower part of the abdomen, and was constantly retching. There was much distension and some tenderness of the abdomen generally. The urine was not albuminous. Her symptoms were at first relieved by calomel and opium, and turpentine fomentations. Later on, she had symptoms resembling those of incipient delirium tremens. At the right side of the navel some kind of substance was felt within the abdomen, which was painful on pressure. Diarrhœa became very great, and her aspect became jaundiced. She constantly had pains above the pubes; the tongue was furred and the pulse weak; the pupils were very small; and she gradually sank and died.

*Post-mortem examination.*—The lungs were found loaded with frothy fluid. The heart was natural. On examining the abdomen, a large quantity of what resembled decolorised fibrin was found lying behind the peritoneum, extending from the diaphragm to the brim of the pelvis, lying in front of both kidneys and around the duodenum, and also to a certain extent penetrating into the mesentery and being in close relation with every part of the colon. It was abundant about the pancreas and supra-renal capsules, and closely surrounded the large vessels of the liver and spleen. Here and there, in the immediate neighbourhood of this deposit, were small circumscribed pustules below the peritoneum; one, of small size, lay just under the mucous membrane of the large bowel. In some places the above-described material was white, like mortar; in others, of a reddish or brownish colour. *Microscopically* examined, it had all the characters of degenerated fibrin, and contained no pus or blood-corpuscules. No source of this deposit could be discovered; no aneurysm nor disease of the bones of the back or pelvis existed, and no traces of peritonitis. The liver was soft, and of a somewhat orange tinge; the kidneys were natural. [46.]

CASE IX.—*Small hard encephaloïd masses sprinkled over large tracts of the peritoneum only; the same connected with the pleural surface of the diaphragm.*

Rose P., æt. 55, was admitted March 23, 1863. She had observed

an enlargement in the lower part of the abdomen for three months, which had gradually spread over the whole body, creating only slight pain, but much uneasiness and occasional vomiting. On admission, the abdomen was distended with flatus, and a large mass—without, however, any distinct edges, and which appeared to belong to the *whole abdominal* cavity—was found. *No fluid* could be detected; and pressure only occasioned pain down the right side. The urine was high-coloured, not albuminous; the evacuations from the bowels were natural. In spite of treatment, she got thinner and more pain came on; vomiting and tenseness of the abdomen followed, and she sank, and died April 12th.

*Post-mortem examination.*—The peritoneal cavity contained a large amount of clear serous fluid. Scattered upon the peritoneum, in *every part*, were numerous white firm deposits, as large as a pea or mustard-seed, resembling hard encephaloïd carcinoma. These small bodies were chiefly abundant in the great omentum, and the folds of peritoneum about the uterus were much thickened by similar, but softer, deposit. The liver was contracted and adherent to the diaphragm by adhesions, and on the upper or pleural surface of the diaphragm were several large deposits of the same kind as that attached to the peritoneum. A very small growth also was found under the capsule of one kidney; but none of the viscera contained any.

*Microscopically* examined, the deposits were found to consist of small cells, mostly without nuclei; some with a single one. [96.]

CASE X.—*Pulsating tumour in the epigastrium formed by scirrhus of the pylorus of the stomach; scirrhus also of other parts; scrofulous deposit, and vomicæ in the lungs; epileptic attacks.*

Elizabeth D., æt. 46, was admitted February 13, 1847, with symptoms of disease of the stomach, having pain there after eating, pyrosis and frequent vomiting, chiefly after food, but at other times also. For two months she had perceived a tumour at the epigastric region, which on her admission was of about the size of a walnut. It was then quite circumscribed, painful on pressure, and situated a little above and to the *right* of the umbilicus. It pulsated as if from transmitted impulse. Shortly after admission the patient had an epileptic attack, followed by raving delirium. Then other convulsive attacks subsequently occurred, during which the *pupils were contracted* to the size of a pin's head, and again became dilated when the fit ceased. She became weaker, and died February 18th.

*Post-mortem examination.*—The tumour of the abdomen was found to be the pyloric end of the stomach, contracted and surrounded by scirrhous deposit, which internally was ulcerated; the omentum adjoining contained similar deposit. Similar scirrhous tubercles also existed beneath the peritoneum, covering the liver, spleen, and one kidney. In the substance of one kidney was also a small tumour of the same nature.

The lungs were somewhat emphysematous, congested, and a slight amount of scrofulous deposit and a vomica were found in one lung.

The brain contained much serum, and was rather softened. [51.]

CASE XI.—*Peculiar thickening of the walls of the abdomen owing to fibrinous exudation beneath the mucous and serous surfaces; placenta-like mass formed by similar deposit in the great omentum. Peritonitis; phthisis.*

Robert B., æt. 35, was admitted February 21, 1855. He said that he had lived freely, and that about five months before admission he became subject to griping pains in the umbilical region, with tenderness over the part. His appetite failed, and he had a feeling of weight after eating. There was no swelling about the abdomen, and no vomiting of food, but often violent retching. The tongue was coated; bowels costive. He said he had had but little sleep for three weeks. Under the use of aperients, with hydrocyanic acid and soda, the vomiting was to some degree stayed; but it became worse, attended by more pain in the abdomen; and he had blood-stained muco-purulent expectoration. He got low and weak and desponding. The expectoration, which became profuse, somewhat ceased under the use of acetate of lead and opium. In spite of stimulants, &c. he sank, and died March 31st.

*Post-mortem examination.*—I found the right pleural cavity full of yellow fluid, and the pleura puckered and thickened. Both lungs contained miliary scrofulous deposits, and much carbonaceous matter on their surfaces; the latter was quite prominent in places, mapping out the lobules. The heart was natural. On examining the abdomen much yellow fluid existed in the general peritoneal cavity, and the intestines were of a very dark purple (almost black) colour, the various convolutions being adherent to each other by soft fibrin, and looking like the coils of a speckled snake; their surfaces were roughened, and in places had quite a reticulated character, owing to effused fibrin upon them. The great omentum was contracted and drawn up, and reduced to a small placenta-like hard mass. The peritoneum everywhere was much thickened, and especially about the mesentery and the stomach, which was reduced much in size, and very much thickened universally by a fibrinous exudation deposited to a slight degree under the peritoneal, and to a greater degree under the mucous, surface, which was in places roughened, the various folds being almost obliterated. In places the peritoneal surface was studded with white deposits. The lymphatic glands were indurated and enlarged. [99.]

CASE XII.—*Tumour in the abdomen, close to the brim of the pelvis, formed by scirrhus of the pylorus of the stomach, which was enormously dilated.*

Sibylla R., æt. 33, was admitted Nov. 7, 1866. She had been gradually losing flesh for nine months, and the catamenia had been

absent seventeen months. She had become worse three months before admission, and suffered from severe sickness and slight and scanty action of the bowels. On admission she had constant vomiting. A large hard tumour could be felt very prominently, close to the brim of the pelvis, on the right side, and almost in the pelvic fossa. An apparent obstruction was found on introducing the long O'Beirne's tube into the rectum, which could not be overcome. Afterwards a small amount of fæcal matter was passed. Stimulants were given, and the bimeconate of morphia injected subcutaneously with great relief. She grew weaker and thinner, and died November 18.

*Post-mortem examination.*—It was found that the tumour felt during life was the displaced pyloric extremity of the stomach, which was so contracted as scarcely to admit a goose-quill, and surrounded by a mass of scirrhus to the extent of an inch. The stomach was enormously dilated. The large intestines were contracted in one or two places, but no carcinoma of their valves existed. The other abdominal organs were natural. The lungs were very œdematous; heart healthy. [311.]

CASE XIII.—*Tumour formed by a mass of extravasated blood, situated beneath the peritoneum, and hanging by a pedicle from the transverse colon.*

Harriet B., æt. 25, was admitted June 11, 1858, with evident disease of the brain. Delirium, strabismus, and other symptoms set in, and she died June 17.

*Post-mortem examination.*— Softening of the central part of the brain, and effusion of serum on the surface and in the ventricles of the brain, were found; also psoas abscess, connected with caries of the bodies of the fifth to the ninth dorsal vertebræ. The intestines were tympanitic, and hanging from the transverse colon, about midway between its attached border and the omentum, was a mass of extravasated blood, covered by the peritoneum, and attached to the intestine by a narrow pedicle. [166.]

CASE XIV.—*Swelling of the right iliac region in connection with cancerous disease of the cæcum, in which was an ulcerating cavity, having the stomach and several portions of the small intestine communicating with it.*

James P., æt. 31, was admitted December 6, 1865, having had diarrhœa, attended by pain and swelling in the right iliac region for four months. On admission, there was a hard diffused swelling in the right iliac region, very painful on pressure; but the skin over it was not red or painful: the bowels were quite regular. After admission, the pain greatly abated, and the tumour subsided, and the patient improved much in health. About the end of January, the swelling and pain returned, and pus was gradually approaching the surface, when suddenly there was an *evacuation of purulent fluid by the rectum*, and the tumour somewhat subsided. He now rapidly emaciated, and his face assumed a cachectic appearance. The right leg became œdematous,

and its superficial veins enlarged. Early in April he had an attack of lung-congestion, and he sank, and died April 15th.

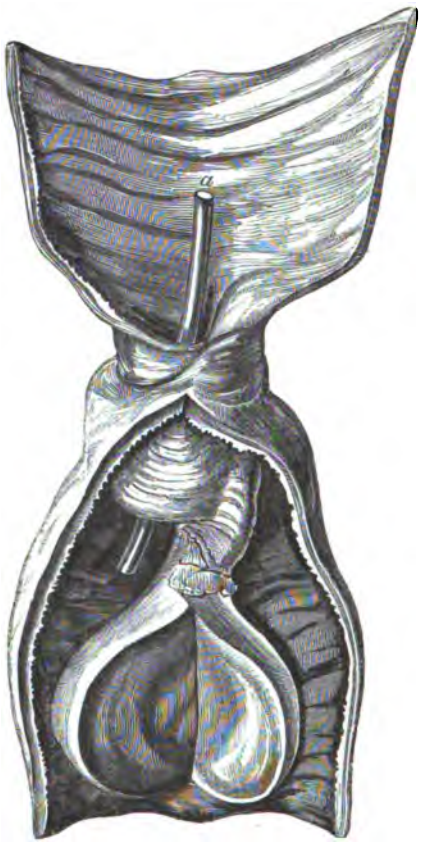
*Post-mortem examination.* — A very large ulcerating cavity was found within the abdominal cavity, surrounded by a mass of intestines adherent to each other and to the abdominal walls. This ulcerating cavity was evidently of a carcinomatous character, and formed chiefly at the expense of the cæcum, and into it opened laterally the small intestine and other parts of the large bowel. The stomach, which was adherent to the mass, also communicated with it at its pyloric end. The liver contained carcinomatous deposits. The lumbar glands were not enlarged. Adhesions and fluid were found in the pleural sacs, in addition to collapse of one lung. The heart was small, and the mitral value slightly thickened. [112.]

CASE XV.—*So-called polypus, or pedunculated fibrous tumour growing from the inner surface of the small intestine, causing invagination of the bowels, and death.*

Thomas G., æt. 46, was admitted August 13, 1845. He had been ill since Easter with pain in the abdomen, attended at first by violent constipation of eight days' duration. Since then almost constant diarrhœa had existed. For a few days before admission the pain had been unusually severe, and rigors had existed. There was loss of sleep and much emaciation. He had been actively treated by leeches, blisters, &c. On admission, the abdomen was tympanitic and painful on pressure, chiefly at lower part, and there was a catching respiration, apparently from pain. There was some expectoration, but nothing wrong about the chest was indicated by the stethoscope. The diarrhœa for a time gave way under the use of chalk and opium, and occasional doses of castor-oil. On the 25th he was suddenly taken with excessive and more extended pain, and with rigors, vomiting, and dyspnœa. In spite of remedies, the pain continued, and the tongue became dry and brown. He sank, and died August 30th.

*Post-mortem examination.* — Extensive indications of serous inflammation and lymph and fluid of a fæcal odour in the peritoneal sac were found, and in the left lumbar region, on removing certain adhesions, an invagination of the small intestine was found to have occurred, the bowel above the invagination being very much dilated, and below it slightly contracted. In the immediate neighbourhood of the invagination the coats of the intestine were very soft, and gave way to a small extent when slightly pulled upon, thus allowing of the escape of a portion of the contents of the gut. On laying open the portion of gut below the invagination, a large pendulous growth was found in the cavity of the gut, and connected by a broad pedicle to the extremity of the invaginated portion of intestine. The body of the polypus, of a pyriform shape (see woodcut, p. 356), was about $2\frac{3}{4}$ in. long, and at its broadest part about $1\frac{1}{2}$ in. in width; its pedicle about the size of the middle finger, $1\frac{1}{2}$ in. long.

The surface of the polypus was quite smooth, and covered by mucous membrane; it was of a dark colour, and quite firm and fibrous when cut into, and plentifully supplied with blood-vessels. The peritoneal surfaces of the invaginated portion of gut had become firmly united




Woodcut showing the intestine laid open, and displaying the fibrous tumour attached to its inner surface. The bougie (*a*) passes through the invaginated part of the bowel.

to each other. This portion of gut was of a dark livid colour, and the intestine immediately above the invagination presented on its mucous surface a broad ulceration occupying two-thirds of the diameter of the gut. The portion of intestine which was the seat of the polypus was about two feet from the cæcum. The other parts of the intestine presented nothing unusual; neither did the liver and spleen. The kidneys were not examined.

The thoracic organs presented nothing worthy of note.

The preparation of the invaginated intestine, with the polypus, is described in our Pathological Catalogue. (See Series ix. No. 177.)* [207.]

CASE XVI.—*Tumour above the brim of the pelvis on the left side, the result of suppuration outside the peritoneum following ulceration of the sigmoïd flexure of the colon. Phthisis; disease of the kidneys.*

Michael M'D., æt. 50, was admitted December 21, 1866. He had had inflammation of the testicle and gonorrhœa two years before admission, and some scrofulous abscesses connected with the left side of the chest. For twelve days before admission he had had pain in the left groin, and for two days he had great pain in emptying the bladder. There had been no vomiting or constipation. A hard mass was found lying above the left brim of the pelvis, apparently connected with the bowel, which was slightly diminished by evacuation of the bowels, but no pus existed in the motions. The swelling increased (in spite of iodine lotion), and extended towards the right side of the body, and became very tender. Afterwards the pulse became very weak, much weakness was complained of, and rigors. The urine contained albumen and pus, and from the first was passed with pain. Vomiting came on and profuse sweating, and deficient breathing with moist sounds was found in the left lung. It appeared as if he was suffering from pyæmia. He became weaker and less conscious, the motions were passed involuntarily, and he sank, and died December 27th.

*Post-mortem examination.*—A scrofulous abscess was found connected with the first rib and its cartilage on the right side. Both lungs contained scrofulous deposit at their apices, and traces of recent and old pleurisy existed. Among the pleuritic adhesions low down on the left, a collection of thin purulent fluid was found.

The liver was cirrhosed, and the kidneys granular, with diminished cortex. A firm cartilaginous stricture of the urethra existed, and the bladder contained purulent fluid. The tumour in the left groin, which was a collection of pus, extended in front of Poupart's ligament, along the crest of the ilium, and into the pelvis external to the peritoneum. The sigmoïd flexure of the colon was adherent to the abdominal parietes for a considerable length; and at one spot, of about the size of a shilling, the coats of the bowel had ulcerated through, and the abdominal walls formed the outer wall of the bowel. From this perforation the suppuration appeared to have arisen. The edges of the ulcer were rounded, and the mucous membrane was more destroyed than the other

* No. 178 in the same series is another preparation of a large fibrous tumour, which was removed after death from the small intestine of a patient æt. 34, who suffered from constipation and violent vomiting, and was presented by Dr. Ogier Ward. It was attached by a pedicle to the mesenteric border of the small intestine, and the border of the bowel was invaginated, but not at a part connected with the morbid growth. When first examined the tumour was of a livid colour, and plentifully supplied with blood-vessels.

coats. The small intestines were matted together in the neighbourhood. The other parts of the large bowel were natural. [355.]

CASE XVII.—*Abscess between the liver and the colon, communicating with the interior of the gall-bladder (which was full of gall-stones), by several perforations through its walls. Ulceration of the duodenum and transverse colon.*

Mark P., æt. 64, was admitted November 24, 1858, in a state of great prostration following an attack of gall-stones. It seemed that he had for twenty years been subject to what were called "bilious attacks," and in 1851 had had jaundice. Eighteen days before admission he had suddenly been seized with pain in the epigastrium on the right side, which continued five days; and on admission pressure over the right hypochondriac region gave pain. The pulse was weak; the tongue red and ulcerated, as if from mercury. When he came in, he had a carbuncle at the angle of the right jaw and purulent discharge from the right ear. The carbuncle was opened. For a time he improved; but muttering delirium came on (such as, it was reported, he was wont to have during his bilious attacks), and he sank, and died December 12th.

*Post-mortem examination.*—The contents of the thorax and cranium were natural. On opening the abdomen, all the viscera were found matted together. The gall-bladder was full of gall-stones, and numerous perforations of the bladder had taken place. Communicating with these perforations was an abscess, lying between the liver and the hepatic flexure of the colon; the contained pus being very yellow owing to admixture of bile. The common bile-duct was natural and pervious. The duodenum was much thickened, and presented a deep ulcer close to its commencement at the pylorus; another similar ulcer was found at the commencement of the transverse colon; and the intestine was congested in patches at other parts. No cause was found for these ulcerations. The kidneys were healthy, excepting a large cyst in one of them.

A large pendulous tumour, having the structure of the prostate gland, projected from the upper part of that body into the neck of the bladder. [295.]

CASE XVIII.—*Tumour in the hypochondriac and epigastric regions, caused by an enlarged liver, occupied by masses of a peculiar fibroïd nature.*

Sarah G., æt. 50, was admitted December 25, 1844. She had been subject to spasmodic cough for seven years, which had latterly become worse. About eight months before admission, she had constant pain at the epigastrium, accompanied by frequent nausea, occasional sickness, loss of appetite, and great thirst. She now noticed the stools to be occasionally very black and fluid, and passed at times with pain. On admission, there was a perpetual sense of sinking at the epigastrium, and gnawing pain about an hour after eating, though food, when first

taken, gave relief. A small circumscribed tumour could be felt in the right hypochondriac and epigastric regions, apparently about the pylorus of the stomach. The vomiting had become almost constant, and she still passed blood by stool. In spite of remedies, she sank, and died January 18th.

*Post-mortem examination.*—Indications of slight pleurisy existed; otherwise nothing was noticeable in the thorax.

On examining the abdomen, the omentum was found tucked up and adherent to the right lobe of the liver, and old adhesions united the upper and under surfaces of the liver to surrounding parts. The right side of the liver was towards its lower margin contracted, and very much puckered on its surface, with great thickening of its peritoneal coat, which presented a cartilaginous appearance. On cutting into this part, several circumscribed tumours were found, varying from the size of a nut to that of an egg, contained in distinct and thickish cysts, formed from condensed areolar tissue. The cut surfaces of the tumours were of a yellowish colour, and apparently homogeneous; their structure was elastic and firm; in some places it was of a pinkish colour, and evidently contained vessels. The liver-tissue around the smaller tumours was congested; the remainder of the liver was coarse and congested, but not otherwise diseased. The gall-bladder was thickened, and contained a largish calculus. The pyloric end of the stomach was adherent to the liver, and the first part of the duodenum was compressed and flattened by the tumours in the liver. The stomach was healthy, but the mucous membrane of the small and large bowels was very inflamed. Both kidneys were diminished in size, and mottled.

*Microscopical examination.*—After maceration for many years in spirit, I found that the yellow deposit consisted of amorphous and granular material, along with a slight amount of fatty and occasionally slightly fibrillated material, and a few delicate small cell-formations. Where the parts had undergone softening, much fatty material was found. The surrounding fibrous structure presented the usual elements of firm fibrous tissue. [19.]

CASE XIX.—*Tumour at the left of the ensiform cartilage, evidently containing fluid, which proved to be owing to a large collection of pus between the liver and the diaphragm; small abscesses in the liver, &c.*

Peter L., æt. 33, was admitted Nov. 1, 1852, in a state of great depression and destitution, complaining of having suffered much from shivering, which was treated as ague, and from pain all over, but chiefly on the right side. There was a small rounded tumour at the left edge of the ensiform cartilage, which bore handling well and evidently contained fluid, the seat of which was thought to be the substance of the liver. Vomiting and great depression, with increased quickness of pulse, came on: and the enlargement was opened by trocar; when above two pints of pus were evacuated, unmingled with

serous fluid, and only occasionally streaked with blood. The patient gradually sank, and died November 21st.

*Post-mortem examination.*—Pus and fibrinous material were found in the pericardial cavity, and fibrinous exudation in one of the pleural sacs.

The liver was firmly and extensively adherent to the diaphragm, excepting at one part, where was a large collection of pus, surrounded by shreddy walls, formed by the adhesions. The liver contained several abscesses in the neighbourhood of the adhesions. On examining them *microscopically*, I found that some of the smaller ones consisted almost entirely of fatty granular matter, as if the contained pus had undergone fatty alteration.

The preparation of part of the liver and diaphragm, showing the position of the pus contained between them exists in our Museum; see Pathological Catalogue, Series ix. No. 250. [227.]

CASE XX.—*Large abscess of the liver, containing a considerable collection of biliary calculi, apparently set up by ulceration of the gall-bladder; communications between the abscess and the duodenum and bile-duct.*

The patient, William G., was attending as an out-patient with jaundiced skin, and whilst in the waiting-room, July 28th, 1852, he had a desire to empty the bowels; and when at the water-closet died quite suddenly. Nothing further of his history is known.

*Post-mortem examination.*—I found that the pericardial sac was dilated with clear amber-coloured fluid, and much recent fibrin in the pleural sacs, as also patches of lobular pneumonia. The heart's cavities were dilated and their walls were thickened. The root of the aorta and mitral valve-flaps were slightly thickened, and the cerebral capillaries were in a highly atheromatous state.

On examining the abdomen, the liver was found to be enlarged, the right lobe at its under surface being very softened and of a dark livid colour, and to this part the duodenum and transverse colon were adherent: and this part of the liver and the adherent duodenum formed part of the boundaries of an abscess, whose walls were very shreddy and offensive in odour, and which, besides a quantity of dark foul pus, contained a number of polygon-shaped biliary concretions, agglomerated and retained together by inspissated mucus and bile, forming a mass equal to a hen's egg. This mass had evidently been formed in the gall-bladder, which had undergone so much ulceration that no traces of it could be found. Two rounded and ulcerated openings existed between this abscess and the interior of the duodenum, which was (as before said), attached to the duodenum, and a similar opening between the abscess and the interior of the common bile-duct, the largest of them being equal to a fourpenny-piece in diameter. The inner surface of the duodenum and gall-duct were otherwise natural. The cystic duct was natural, and

could be traced into the abscess of the liver. The other parts of the liver were in a very fatty state, and the various arterial branches of the cœliac axis were very atheromatous. The kidneys were very large (weighing together 16oz.), soft and congested, having much fat about their pelves: and their surfaces were granular. Other abdominal organs were not examined.

The preparation was shown to the Pathological Society, Feb. 21, 1854 (see *Transactions*, vol. v. p. 161); and is described in our Hospital Catalogue, Series ix. No. 292. [151.]

CASE XXI.—*Tumour formed by a distended gall-bladder, whose walls were the seat of carcinoma, and whose duct was obstructed by a gall-stone. Carcinoma of the liver and lymphatic glands.*

William H., æt. 38, was admitted October 25, 1865. He had been ill nine weeks, beginning with pain in the back and over the liver. Two weeks later a tumour below the right ribs was noticed, and six weeks later he became jaundiced; the motions became light-coloured, and the urine bile-tinged. On admission the tongue was furred, the skin yellow, the pulse quiet. The urine contained no albumen. In the region of the gall-bladder, close under the ribs, an oval tumour was felt, of the size of a large walnut, which was painful and tender, and altered with change of position: to a certain degree the hand could be passed under its edge, *and it was thought to be a distended gall-bladder.* The patient had a cachectic look, and the jaundice increased: the appetite failed, and "cramps" came on in the abdomen and back. The skin became dry and itching, and the evacuations were very light-coloured. He became of a deep-olive colour, and very emaciated. He gradually sank, and died, conscious to the last, January 3d.

*Post-mortem examination.*—Excepting slight thickening of the aortic valves, the thoracic organs were natural.

The diaphragm and other parts were closely adherent to the liver, which was deeply charged with bile. The gall-bladder contained three large stones, and of these one was impacted in the mouth of the cystic duct. The gall-bladder was greatly distended with bile, and its coats nearly uniformly thickened by a layer of carcinomatous material, taking the place, as it were, of the mucous membrane, the serous coat being unaffected. The liver also contained one or two small nodules of encephaloïd substance, and the glands of the small omentum were occupied by the same. The bile-ducts were generally very dilated.

The other organs of the body were natural. [3.]

CASE XXII.—*Enlarged and indurated pancreas.*

James S., æt. 28, admitted November 3, 1841, with hypertrophy and disease of the heart and valves, and congestion of the lungs. He died December 29th.

After death, in addition to the state of the thoracic organs, the pancreas was found to be much hypertrophied. It was also much

condensed; so much so that it "cried" when cut into with the knife. [209.]*

CASE XXIII.—*Hard substance below the ensiform cartilage, which proved to be the pancreas exposed by displacement of stomach.*

James S., æt. 34, was admitted January 31, 1851, suffering from anæmia and emphysema. The urine was healthy, but he had some pain in micturition, and complained of palpitation. For the time he improved, but became affected by sickness and vomiting, though without pain; and at this period a fulness and hardness could be felt just below the ensiform cartilage. He became more exsanguine; more pain of head came on, and eventually coma, and he died February 11th.

*Post-mortem examination.*—Much clear fluid existed in the sub-arachnoïd tissues, and the ventricles were quite full of the same. In addition to emphysema, there was old tubercle of the lung. All the abdominal organs were very bloodless, but all were quite healthy, excepting the left kidney, which contained a few cysts. The stomach was displaced, and larger than it should be; so much so that the lesser curvature was below the pancreas, and this organ could be easily seen and felt without displacing any of the viscera. [30.]

CASE XXIV.—*Soft masses of carcinomatous* (?) *growth connected with the peritoneum, pressing on the common bile-duct; no similar growth elsewhere.*

Robert T., æt. 53, was admitted October 7, 1862, having been ill only one month. In a day or two he had become jaundiced. His abdomen had swelled, and great pain now come on in that region, along with diarrhœa. The pulse on admission was weak and skin cold. The liver extended below the ribs 1½ inches; no fluctuation was found in the abdomen. The evacuations were pale and offensive. The urine was high-coloured, but in other respects natural. He got weaker, and on the 16th became drowsy and confused in manner. The abdominal pain became acute, and much headache came on, and quickness of respiration. Complete coma came on, and he died Oct. 18th.

*Post-mortem examination.*—Much fluid existed in one pleural cavity, and the lower lobe of the lung on the same side was solidified. The heart was natural, except slight thickening of the aortic and mitral valves. The liver was large and congested, and full of bile, but other-

* Condensation of the pancreas may be attendant upon ulceration of the stomach. The following case illustrates this: John L., æt. 52, was admitted into our hospital October 17, 1855. He died November 15, with ulceration of the stomach, producing perforation of the walls of that organ. The ulcerated opening at the posterior part of the stomach was blocked up by an adherent pancreas, which was very hardened and thickened, and at the part of an unusually white colour. [298.]

wise natural. The gall-bladder contained a small quantity of bile. The ducts, dissected out, were found to be natural in themselves, but attached to the peritoneal covering of the pancreas were two soft rounded masses which had obviously pressed on the common bile-duct near the duodenum. These were rather larger than walnuts. *Microscopically examined*, they were found to consist entirely of globules much resembling those of pus, but more irregular in shape, and showing, after the addition of acetic acid, for the most part only one nucleus in addition to granular matter. The tumours were supposed to be carcinomatous, though nothing of the kind existed in any other part of the body. The substance of the pancreas was natural. [282.]

CASE XXV.—*Encephaloïd carcinoma of the lymphatic glands of the abdomen and mediastinum. The various viscera free, excepting the duodenum, which was at one point only slightly affected.*

Elizabeth G., æt. 18, was admitted Feb. 4, 1846, having for three or four months been losing flesh and strength; the catamenia had been absent five months. She had lost appetite and become restless, having a slight hacking cough. Latterly the legs had swelled in an evening.

On admission she had some dyspnœa and some degree of pain in the epigastrium. The chest was pretty resonant on percussion, and only slight crepitation with respiratory murmur was heard. Heart natural, but its sounds diffused more than they should be. The abdomen was somewhat tympanitic, but nothing positively wrong could be felt. She was often sick, but not particularly after taking food. Bowels confined; skin hot and dry; urine free from albumen. In spite of counter-irritation to abdomen and of tonics, profuse perspiration came on and diarrhœa, and by degrees she became much jaundiced. Slight cough existed, but no expectoration. A dull pain continued in the abdomen, but no fresh symptoms arose. She became weaker, and died April 10th.

*Post-mortem examination.*—Thorax. The lungs were partially hepatised posteriorly. Heart healthy. A chain of enlarged glands, infiltrated with encephaloïd carcinoma, existed in the posterior mediastinum, and lying on the large vessels of the part.

Abdomen. All the various viscera were natural. The peritoneal cavity contained a small quantity of dark-coloured serum. *Behind the peritoneum*, and surrounding and pressing upon the greater part of the abdominal aorta and upon the vena cava, was a large mass of encephaloïd cancer. The pancreas was lying on this mass, but was *not* affected by it. The large branches of the portal vein and the ductus choledochus were imbedded in the mass. The duodenum surrounded two-thirds of the tumour, upon which it was partly lying; but it was not involved, *except in one* small portion, where there was a slight projection into the cavity of the bowel, which was, however, still covered by healthy mucous membrane. The rest of the intestines and the vessels were natural. [84.]

CASE XXVI.—*Large fibro-cystic tumour connected with the right side of the uterus, thought to be ovarian dropsy.*

Mary G., æt. 45, was admitted February 21, 1844, with anasarca of the legs and fluctuating distension of the abdomen. She said the disease began with a solid tumour in the left iliac region. The abdominal swelling, which from its situation and fluctuation was thought to be ovarian dropsy, continued to increase, and tapping of the fluid had to be resorted to, when about eight quarts of a thick brownish fluid were evacuated. Afterwards a solid tumour could be felt low down in the abdomen. Symptoms of low peritonitis set in, and she died April 12.

*Post-mortem examination.*—The lower two-thirds of the peritoneal cavity were occupied by a large tumour, which came up from the pelvis. The tumour was united by adhesions to the anterior walls of the abdomen. The upper part was composed of large membranous cysts, of a dark colour and inflamed, and containing a quantity of dark-coloured fluid. The lower part was composed of solid substance, containing an enormous number of cysts, which varied from the size of the minutest network to that of an orange. All these cysts were filled with clear serum, which contained a large amount of albumen. The connection with the uterus was by means of a pedicle two inches in breadth, and one and a half in length; it was formed by the muscular fibres of the uterus, which were traced up the sides of the tumour to some distance, and then lost. In various parts of this tumour were large growths of solid structure, not containing any cysts whatever, which looked like encephaloïd cancer; these growths were found to be of a fibrous nature. In the body of the uterus there was also a small white tense tumour, of the size of a French bean, which also outwardly resembled encephaloïd, but was in fact fibrous. None of the glands were affected. The liver, kidneys, spleen, &c., were natural. The preparation of a portion of the tumour is described in our Pathological Catalogue; see Series xiv. No. 71. [77.]

CASE XXVII.—*Sloughing cavity between the vagina and rectum, opening into the latter. Ulceration of the posterior surface of the uterus, forming the anterior boundary of the cavity. Peritonitis. Remarkable absence of physical signs.*

Elizabeth C., æt. 28, was admitted Sept. 20, 1848. She had been seen a short period before admission, and it was stated that at that time one or perhaps two tumours in the lower part of the abdomen were discovered. There was also much tenderness and pain at the part. The catamenia had been absent two months. She stated that the pain in the lower part of the abdomen had existed more or less ever since she had pain in the limbs and shivering five weeks before. On admission she was much emaciated, and said she had observed a quantity of whitish matter in her evacuations, and that she was sensible of "tumours things rolling about in the abdomen,"

&c. She had much pain, greatly increased by pressure, *but no tumour could be felt in the abdomen.* She had cough and night-sweats, but no positive evidence of tubercle in the lungs existed. No disease of the rectum or vagina could be detected on examination; but the uterus seemed soft and flabby. For a time the pain and the purulent discharge ceased, but returned with greater severity, with much vomiting. In spite of opiates and bark, &c., she sank, and died on Oct. 25th.

*Post-mortem examination.*—The lungs contained crude tubercles at their apices; the surrounding tissues being rather consolidated. The heart was healthy.

On opening the abdomen, general recent peritonitis was found, and all the viscera of the pelvis were surrounded by greatly thickened and condensed areolar tissues. Between the vagina and rectum was an irregular sloughing cavity communicating by a large ulcerated cavity with the lower part of the rectum. The anterior wall of this abscess was in a measure formed by the fundus of the uterus, which was in part destroyed by ulceration. There was very little trace of the ovaries, the right especially being scarcely distinguishable from fibrous tissue. The mucous membrane of the bladder was inflamed; that of the rectum healthy, excepting at the point of ulceration. The vagina was healthy; os uteri prominent. Kidneys rather small, coarse, and pale, but smooth on the surface. [220.]

CASE XXVIII.—*Large tumour in the abdomen, thought to be a fibrous tumour, which proved to be the uterus, pushed up by a fibrous tumour attached to its inner surface, and filling almost entirely the pelvis.*

Sarah F., æt. 38, emaciated and of a sallow complexion, was admitted July 14, 1845, having had much vaginal discharge, and clotted blood passed during menstruation, which was too frequent. For the previous four or five months she had felt a tumour at the lower part of the abdomen, which she fancied moved from side to side. Occasionally she had retention of urine. The tumour gradually increased until admission, when an oval elastic tumour could be felt occupying the vagina, and very nearly filling the pelvis. An oval tumour could also be felt above the pelvis; *and above this again, upon the right side, and rather below the umbilicus, was another irregular tumour.* This was supposed to be a second fibrous tumour projecting from the peritoneal surface of the uterus. The vaginal tumour was ligatured. Ulceration of the walls of the vagina and neck of the bladder supervened, and the patient died July 29th.

*Post-mortem examination.*—The fibrous tumour of the uterus was found quite to spring from the fundus of the cavity by a thick pedicle, and the diseased mass filled the pelvis. The tumour recognised within the abdomen during life, reaching almost as high as the umbilicus, turned out to be *the uterus*, which was pushed up by the diseased mass above described. The peritoneum was healthy; the surface of the fibrous tumour was in a sloughy state, and the vagina and neck of the bladder much ulcerated. The rectum was

misplaced, but healthy. The tumour is described in our Pathological Catalogue, Series xiv. No. 48. [188.]

CASE XXIX.—*Tumour in the pelvis, formed by blood extravasated between the layers of the broad ligament of the uterus. Peritonitis; perforation of the ileum, and cicatrix at another place. Peculiar symptoms.*

Bridget T. was admitted Feb. 4, 1852, suffering from a recent attack of what appeared to be local peritonitis, and with an anæmic aspect. The catamenia were regular, but habitually scanty. In three weeks she left the hospital, as being considered well; and as her health appeared reëstablished, she had married, but had not become pregnant. She, however, always suffered from constipation. On Oct. 24th she was suddenly seized with pain in the abdomen during the night. On the next day she had a costive motion, and then no other for a week, when she was greatly relieved by aperient medicine. She then had no alvine evacuation for a fortnight, and *stercoraceous vomiting came on* on the morning of admission, in spite of purgatives, the use of leeches, &c. The tongue was tolerably clean, the pulse 180, the abdomen full and firm; and every now and then large coils of intestine could be distinctly felt rolling about under the hand, accompanied by paroxysms of pain. As calomel and enemata did no good, opium was given at regular intervals, with the effect of relieving the distressing symptoms; and at length the *obstruction gradually gave way*, and a large amount of yeasty stone-coloured fæces passed. She appeared to recover rapidly; so much so as to leave the hospital again, Dec. 8th. On the 24th she again returned, as she was less well, and also suffering from constipation, having had much abdominal pain, which was now severe and constant. The pulse was feeble and rapid, and the abdomen tense and full. After a very restless and painful night, she was quite collapsed the next day, and died in the afternoon.

*Post-mortem examination.*—The peritoneal cavity was found to contain much recent lymph and turbid fluid, mixed with fæces and fetid gas. Perforation of the ileum about one foot from the cæcum was detected. The aperture was thin and uneven, and the mucous membrane around not inflamed, but stained of a dark colour. Halfway between this perforation and the ileo-cæcal valve the intestine was constricted and presented an evident cicatrix; and this part adhered to another part of intestine. The stomach and kidneys were natural. Occupying the right side of the pelvis, and rising into the iliac fossa, was a large globular tumour of a dark purple colour and of the size of an orange, which proved to be a thick cyst filled with coagulated blood, which was laminated indistinctly and situated between the layers of the broad ligament, being also closely adherent to the Fallopian tube and ovary, which were separable from it, the former of them terminating in a mass of fibrous material. Both ovaries contained small cysts. [249.]

CASE XXX.—*Ovarian tumours on both sides of the abdomen; peritonitis masking their presence.*

Emma H., æt. 26, was admitted November 23d, 1854. Three months previously she had suffered much from pain in the loins and abdomen, attended by diarrhœa. The abdomen had begun to swell one month before admission. She was a married woman; her last child having been born twenty-two months previously, and all that time she had been suckling it. On admission the pulse was quick and jerky, the tongue dirty; the abdomen was fluctuating and distended; the urine contained much of the lithates, and a slight amount of albumen. She was treated under the supposition that she suffered from peritonitis,—slight ptyalism being produced,—and morphia was given, as she had restless nights. She afterwards had a relapse, and after that the abdomen was tapped. A quantity of reddish fluid, mixed with masses of fibrin, was drawn off. Diarrhœa and pain followed, checked by opium and chalk. The abdomen again filling, she was again tapped, with much relief; but she became weaker, sank, and died February 1st.

*Post-mortem examination.*—Excepting that the pleural sac contained much reddish fluid, the lungs being compressed and the general cavities encroached upon by the abdominal contents, the thoracic organs were natural.

Abdomen. The parietal and visceral peritoneum was thickened and opaque and vascular, and the cavity contained about two quarts of straw-coloured fluid. The greater parts of the abdominal and pelvic cavities were filled with a large ovarian tumour, which originated apparently in the left ovary, displacing much the intestines. It was also connected with the left broad ligament and Fallopian tube by a broad neck, and its surface was indented, as if it had been composed of several cysts. On section, it was found to consist at its circumference chiefly of a whitish opaque substance, which was in some parts tolerably firm and laminated, like the white fibrinous clots of the heart; in other parts it was more diffluent. The central part was more solid and rather vascular, but evidently consisted of a lowly-organised fibrinous product. Another tumour, of a similar character, consisting of a single cyst filled with a moderately firm whitish laminated fibrinous mass, was found also in the place of the right ovary. The uterus was healthy and very little displaced. The abdominal viscera were healthy. [34.]

CASE XXXI.—*Fluctuating tumour of the abdomen, which proved to be a distended and inflamed urinary bladder, the emptying of which was apparently prevented by pressure of a retroverted pregnant uterus on the urethra.*

Elizabeth S., æt. 45, was admitted May 10th, 1848, complaining of much pain in the abdomen, which was greatly distended, and of a rounded tumour, which was easily to be felt, with a very defined

border, just above the pubes, rather to the right of the median line. This gave very decided evidence of fluctuation, and a sensation as of having very thin walls. It appeared to interfere much with respiration. Behind the tumour, the bowels lay distended with solid matter and gas. She was unable either to evacuate the rectum or the bladder. The legs were œdematous, tongue furred, pulse feeble and frequent. The patient stated that she had had a miscarriage twelve months before, since which the catamenia had never returned; but she had enjoyed good health until three or four weeks before admission, when she was suddenly seized (April 16th) with cramp and violent pain in the abdomen, and perceived a swelling in the right side on the same evening, which had continued to increase. She said she had passed neither urine nor stool for four days.

When admitted, much dark-coloured alkaline offensive urine was drawn off, and poppy fomentations applied to the abdomen. The tumour remained, and the bowels could only be relieved by medicines, and that with difficulty. At first the patient was better, but pain and weakness increased, and, owing to excessive tenderness of parts, no satisfactory examination of the vagina could be made. The pulse became more frequent and weak, and the tongue brown and dry, and sordes formed. The œdema of the legs was removed, and the fluctuation of the abdomen also, leaving *a solid tumour* to be felt over the pubes. The urine contained albumen and a deposit like altered blood-corpuscles. She lived entirely on wine, brandy, and eggs; on the 24th she had a miscarriage of a fœtus a few weeks old, and the next morning fifty ounces of urine were drawn off, the usual quantity not exceeding from fifteen to twenty. She sank, and died May 25th.

*Post-mortem examination.*—The omentum and intestines and bladder were adherent to each other, and offensive pus existed between them. The bladder was greatly dilated (capable of holding two or three quarts), and reached as high as the umbilicus, being adherent to the anterior walls of the abdomen by effused fibrin, which easily gave way. Its mucous membrane was in a sloughy state, and lined by effused lymph. The urethra was in a still more sloughy state, and also the surrounding tissue, so that it was impossible to distinguish the natural passage. The uterus was four or five times larger than natural, and had the appearance of one which had lately parted with its contents. The fundus pressed back on the rectum, so that the lower part might have pressed on the urethra. The vagina contained a few ulcers. The rectum was healthy. The kidneys were mottled and inflamed, and their pelves dilated. [107.]

CASE XXXII.—*Tumour formed by a soft carcinomatous growth of the kidney, simulating ascites by its apparent fluctuation during life.*

The patient, a child æt. 3 years, was an out-patient at the hospital, and was thought to be labouring under ascites. She was taken ill at her own house, and died. The early history of the case is unknown.

*Post-mortem examination.*—Thorax. Carcinomatous disease of the lungs was found.

Abdomen. The liver and other abdominal viscera were healthy, excepting one kidney, which was occupied by carcinoma. This growth consisted of large masses, which had evidently originated in the concave portion of the kidney, and had grown inwards, the convex end of the organ projecting separately from the outer side of the mass, whilst its upper and lower parts were continued a little distance into the upper and lower parts of the tumour, the remaining portion of the surface of the tumour being covered by the fibrous capsule of the organ. The apparent fluctuation noticed during life was altogether dependent on the carcinomatous tumour of the kidney. All parts, examined *microscopically*, were found to consist exclusively of circular granular nuclei, exactly similar to the nuclei of the ductless glands. The preparation is described in our Pathological Catalogue, Series xi. No. 38.

CASE XXXIII.—*Tumour in the left iliac (?) region; excessive distension of the urinary bladder, which became ulcerated and perforated; peritonitis; unsuspected pregnancy after an interval of nine years from the birth of the previous child.*

Martha M., æt. 45, was admitted March 19th, 1854. She was a married woman, whose last child had been born nine years previously, and who had not suspected herself to be pregnant. She stated that she had been ailing since Christmas, and had latterly had a tumour in the left iliac region, which was thought to be the cause of her illness. On the 25th of February she was suddenly seized with pain in the abdomen, and for the three following days is said to have passed no urine. *It then began to dribble* away; and from that time she had never been able to retain the urine, and had not been free from pain. It appeared that no catheter had been passed until the day before admission, when her medical man had been changed. For some time before admission, the legs and abdomen had swelled. The bowels had been constipated, and she had had great thirst.

On admission the pulse was quick and small, the tongue coated, the legs rather swollen, the abdomen tense and tympanitic, and somewhat tender, being hard and firm at its lower part, fluctuation being indistinct at its pendent parts. The urine, when drawn off, was bloody and ammoniacal, and contained altered pus. In spite of treatment she sank, and died March 24th.

On post-mortem examination I found the following appearances:

Thorax. Firm adhesions existed in both pleural sacs. Lungs emphysematous and congested and friable in their lower parts; and in the substance of the right one some blood was extravasated. The lining of the bronchial tubes was very vascular and covered with bloody mucus. The heart was natural.

Abdomen. There was much fat in the integuments and beneath the muscles. The peritoneal sac contained dark-coloured fluid and

shreds of recent fibrin. The great omentum was thickened and adherent, along with one or two folds of small intestine, to the left part of the upper surface of the bladder, which reached as high as the umbilicus, and was distended. On removing the adherent omentum and intestine, a small aperture in the walls of the bladder became apparent, as also some recent pus among the adhesions; and through this aperture came a quantity of dark-coloured urinous fluid. The bladder was found to be enormously distended with fetid dark fluid. Its walls were thickened, and its lining surface presented in many parts rounded ulcerations, by one of which penetration of its walls was only obviated (as before said) by adhesions externally. The neck of the bladder was very vascular, and presented one or two abrasions or ulcerations. The entire pelvis was filled with a fluctuating tumour, which proved to be a pregnant uterus; the fœtus being about four months old, and apparently healthy. The distended membranes projected through the os uteri.

Cranium. The arachnoïd cavity contained a quantity of recent yellow fibrin; but otherwise all the contents were natural. [86.]

CASE XXXIV.—*Abscess in the walls of the abdomen in connection with a piece of bone which had been swallowed and which perforated the intestine.*

A. B. was admitted May 19th, 1855. She was a charwoman, who had been living badly, but who did not appear unhealthy; the tongue was irritable and the appetite bad; and she applied to the hospital owing to an abscess in the abdominal walls about one inch below the umbilicus in the median line. Of its history she could give no account, except that she had observed a lump at the affected part for three weeks, which had been increasing and getting painful for two weeks. She said she had had two fits of shivering, one six days and the other two days, before admission. On admission the skin covering the tumour was red, but no fluctuation was apparent. There was no impulse at the part on coughing, and it was not resonant. Leeches were applied; and in a few days an abscess formed, which was opened and much foul pus let out. The fetid discharge continued until the 30th, when, after sleep, at night she was suddenly seized with faintness and a sensation of cold. In spite of stimulants she became pulseless and cold, but was still sensible enough to indicate that she had no pain in the abdomen. She very quickly sank and died.

*Post-mortem examination.*—We found the lungs and heart healthy; the right cavities of the latter being distended with fluid blood.

The abscess described above was of about the size of the palm of the hand, and found to exist between the structures of the abdominal walls. Shreds of sloughing areolar tissue were found along with the fetid pus of the abscess, which had opened through the abdominal wall behind by an irregularly-shaped sloughy orifice of about the size of the end of the index finger; but this orifice did not

communicate with the abdominal cavity as far as could be observed; for the great omentum was adherent to its margins and the surrounding parts to some extent. The central part of the transverse colon was also adherent to the abdominal wall at the same part; the bands of adhesion connecting the colon to the abdomen were, however, firmer in texture and evidently of older date than those connecting the great omentum to the same part. In the cavity of the abscess was found an acicular piece of bone, smooth on its surface, pointed at both extremities, and of a yellowish-white colour. (I took it to Mr. Quekett, who determined that it was part of the rib of a rabbit.) The colon was found to be quite healthy. The general peritonæum was somewhat vascular; but the abdominal organs were natural. [157.]

CASE XXXV.—*Abscess below the ribs, displacing the kidney, in connection with encephaloïd carcinoma of the vertebræ.*

Mary A. W., æt. 39, was admitted in January 1863. Since November she had suffered from pain in the loins and left thigh, and from debility and loss of appetite. When admitted there was lateral curvature of the spine, and at the edge of and beneath the lower ribs on the left side a hard immovable tumour, two or three inches in diameter, was found; and lower down was also a soft and movable mass. The urine was free from albumen. She was treated with iodine of potash, and an opium plaster was applied to the affected parts. She went out of the hospital, but was subsequently re-admitted (March 11th), the tumour having increased, with a very cachectic appearance. Large quantities of blood became passed by the bowel, and she died March 25th.

*Post-mortem examination.*—Thorax. Slight miliary scrofulous deposits were found in the left lung. The heart was natural.

Abdomen. There was encephaloïd carcinoma of the liver and ovary. The left kidney was found lifted up along with the pancreas by a collection of fetid matter, having the bodies of the vertebræ which were infiltrated by encephaloïd carcinomatous material, for its posterior boundary.* The kidneys contained "blocks" of fibrin in their substance. Cysts in the ovary were found to contain numerous hairs. [80.]

CASE XXXVI.—*Abscess connected with disease of the vertebræ opening into the bladder; abscess of the kidney.*

Agnes W., æt. 40, a very fat woman, and rather yellow about the eyes, was admitted Dec. 22, 1865. It appeared that, excepting bronchitis, she had had no illness up to four months before admission, when the legs began to swell. For two months she had complained of

* A patient has recently died (September) under my care at the Hospital with abscess *behind* the right kidney, pushing forward this organ during life. The kidney was almost entirely replaced by a large mass of fatty growth, which also extended down the ureter to the bladder in a remarkable way.

pain in the back, chiefly on the right side, accompanied by occasional vomiting, and it was thought then that she had abscess of the kidney. One month after this the dropsy diminished. Before admission she had shivering and feverishness, and had had a blister applied; and when admitted the pulse was 130 and feeble, and there was slight anasarca of the legs and ascites. The urine was like that from an irritated bladder, but contained no albumen. About two weeks after admission she had shivering, followed by sickness, but no pain. On Jan. 4th she suddenly passed about half a pint of pus from the bladder, which had not the appearance of having been long detained therein. Later on, the arms began to swell, but still no pain existed, excepting slight scalding on micturition. If any tender spot did exist, it was impossible to detect it, as she was so stout. The motions eventually passed involuntarily, and she became less sensible. She lost strength quickly, and no further change occurred until she died, January 12th.

*Post-mortem examination.*—Emphysema of the lung and dilatation of the heart were found. The liver was very greatly cirrhosed, and all its fibrous tissue much increased. Behind the left kidney was a large abscess, which contained a considerable quantity of pus. This was traced down to the left side of the *bladder, into which it opened* by two or three small rounded apertures. This abscess proved to be connected with a small rough patch of diseased bone on the body of the second lumbar vertebra. There was a small circumscribed abscess in the right kidney, and both kidneys were vascular, having injected pelves. The bladder was vascular, containing pus. [14.]

CASE XXXVII.—*Abscess of the groin connected with disease of the pubic arch; opening of pelvic abscess into the cavity of the uterus.*

Maria C., æt. 15, was admitted August 16, 1865. For six months she had suffered from pain and difficulty in passing the urine; and for some time she had had pain in the back. Six weeks before admission a swelling had formed in the left groin, and when she came into the hospital a fluctuating abscess was found in this part; after a time this burst over the crest of the left ilium, and much pus was evacuated. A purulent discharge also took place from the vagina, and continued to do so. She sank, and died February 16, 1866.

*Post-mortem examination.*—It was found that the abscess in the left side of the abdomen had originated in a carious state of the upper part of the left pubic arch, very near the symphysis, which was itself natural. The pubic arch on the right side, *at exactly the corresponding part* of the bone, was also similarly affected by caries, but to a very slight extent. The pus, in connection with the abscess, had burrowed all round the left hip-joint and upper part of the thigh. Parts of the ilium and of the lumbar vertebræ were rather rough, and, as it were, eroded; and pus was found to have ascended upwards along the left psoas muscle from the brim of the pelvis. Purulent fluid was also found to have passed through the pelvic tissues from the abscess, and to have

found its way *into the cavity of the uterus* by an opening through its walls half an inch above the os. The bladder and rectum were natural liver fatty. A few scrofulous tubercles were found in the uterus. [52.]

CASE XXXVIII.—*Abscess in the abdomen in connection with disease of the pelvic bones.*

Louisa W., æt. 43, was admitted February 27, 1866, with a hard tense swelling in the lower part of the left side of the abdomen. It appeared that this had come on without any assignable cause three weeks before admission. After admission the swelling gradually softened and burst externally. The patient was then affected by cough, and she began to lose flesh; the left leg became anasarcous. No cause of the abscess in the abdomen could be discovered, and she sank, and died May 8th.

*Post-mortem examination.*—Much fluid was found in the pericardium, and the lungs were emphysematous.

The abscess was found to have originated in carious disease of the crest and fossa of the left iliac bone, and pus had found its way thence upwards along the left lumbar region as far as the left kidney, which it partially surrounded. The bowels were matted together, but the abscess did not open into them. The iliacus, psoas, and quadratus lumborum muscles on the left side were almost quite destroyed, and the greater part of the second lumbar vertebra was exposed; a large reddish-brown clot existed in the left femoral vein, but there was little or no thickening of the sheaths of the vessels. [139.]

CASE XXXIX.—*Rounded tumour in the abdomen, which proved to have been a calculus which had made its way out of the kidney into the intestines.*

Julia B., æt. 31, generally a delicate woman, was admitted July 1851, passing much pus in the urine; she had been ill one month, the illness beginning with pain in the abdomen and loins, and arrest of the flow of urine: she had felt rather feverish, however, for a week or two before this. On admission, the purulent urine was acid; the pulse was 96 and soft; tongue pretty clean; she had much pain in the left iliac region (of two days' standing). The hypogastrium was hard and resonant, and a rounded tumour was found in the right side of the abdomen, having no resonance when percussed. She was very thin and had much night-perspiration. Under treatment she so far recovered as to be able to leave the hospital. It appears that six weeks after she left she was suffering from diarrhœa, and felt a "bearing-down" in the bowel, and passed a calculus which was evidently not biliary, and, when examined by Dr. Bence Jones, was found to consist of uric acid and oxalate of lime. Since that time she had been fairly well, excepting being subject to attacks of "biliousness," until three weeks before she was again admitted into the hospital, when she was seized with pain in the head and limbs, followed by sickness and severe pain in the abdo-

men, especially on the right side; she then vomited much, chiefly yellow material. When admitted, February 4, 1852, the sickness was stayed; but the pulse was 130; the tongue whitish; and there was cough and expectoration. She lay chiefly on the back, with the legs somewhat drawn up; pain in the right side, chiefly below the diaphragm, being produced by coughing. There was rather more fine crepitation in the right than in the left lung behind, and the liver seemed to extend some distance below the ribs; though pain in the hypochondrium, which was hard and tender, prevented this from being clearly made out. In spite of treatment the pulse kept high, and the countenance very anxious. The urine was passed mostly with the stools, but when passed separately was found to contain pus-globules and epithelial scales, and a slight amount of albumen. The lung-symptoms were treated, and for a time she improved. Night-sweats and hectic came on, attended by severe diarrhœa, and she sank, and died February 18th.

*Post-mortem examination.*—Old and recent pleural adhesions existed in both sides of the chest; the lungs themselves were congested; the heart natural.

On opening the abdominal cavity, extensive adhesion was found to exist between the stomach, the transverse colon, and the under surface of the liver; which organs were also adherent to the abdominal parietes. The transverse colon was also found to be tied down with tolerable firmness; and at its flexure at the right hypochondrium it was intimately adherent to the upper and anterior part of the right kidney. The kidney at this part, to which the bowel was adherent, was greatly softened, and dilated into a pouch, with a cavity communicating with the interior of the colon. The communication would admit of about a quill, and had rather hardened and thickened margins. In the pouch of the kidney were two or three small calculi of about the size of two peas each. This kidney was generally softened and increased in size; the other kidney was natural. The lining of the colon around and below the ulcerated opening into the kidney was thickened and congested, but nothing more.

The other organs were natural. [42.]

CASE XL.—*Very large abdominal tumour in the iliac region, which proved to be owing to hæmorrhage from ulceration of the aorta.*

James G., æt. 30, an intemperate house-painter, was admitted June 1, 1859, having been ill for six months with pain in the loins and left hip, increased by stooping. There was no pain on passing water, but he complained of inability to empty the bladder. Four years before admission he had had rheumatism, but not since. For three months he had had pain in the left hypochondrium, but had been at work up to May the 24th. His complexion was sallow, and he was weak, with a cold skin and furred tongue, and loss of appetite. The pulse was 120, and very weak, and no pulse was felt in the left wrist. He had had but little sleep of late. On the day after admission, a large tumour was found, ex-

tending from the diaphragm above, to a line joining at right angles the anterior superior spine of the pelvis below, and bounded by the median line of the body on the right. It was smooth, solid, and hard to the touch, and pulsated visibly. No bruit was heard. Urine was scanty, and contained much lithic acid, but no albumen. The whole, but especially the lower part, of the tumour was tender, and the superficial veins were turgid; some observers suspected that the tumour was an enlarged spleen. The blood was found to contain an unusual amount of white corpuscles. Enemata of morphia gave great relief to pain, &c.; he took iodide of potash and bark. At 9 P.M. of the 4th of June he had been to stool; he fainted whilst getting into bed, and died in about a quarter of an hour.

*Post-mortem examination.*—The thoracic organs were quite healthy, excepting that the heart was flabby.

On opening the abdominal cavity, a quantity of blood escaped. The liver was healthy; the spleen was smaller than usual, and pushed upwards. A large tumour was found behind the peritonæum, occupying the entire left of the abdomen, formed by a large clot of blood, firmer in some parts than others, but not decolorised or laminated in any part. The peritonæum was tightly stretched over the mass, and it could not be found where the blood had made its way into the peritoneal cavity.

The abdominal aorta was pervious throughout, and lay on the right side of the coagulum. The anterior surfaces of the two last dorsal and two upper lumbar vertebræ were very carious, and opposite to these diseased vertebræ there was an ulcerated opening in the coats of the aorta about as large as a silver penny, around which the coats of the vessel were thickened and reddened. From the healthy state of the rest of the vessel, and from the situation of this opening, corresponding exactly to the opening of two of the lumbar arteries out of the aorta, it was conjectured that the source of the hæmorrhage was the coagulum, and the pancreas and descending colon adherent to the implication in the disease of the spine of one of these small vessels at its juncture with the aorta. The left kidney was embedded in clot. The kidneys were healthy.

The fibro-cartilaginous discs between the diseased vertebræ were natural.* [130.]

* The ulcerated aorta is described in our Museum Catalogue as No. 1, subs. 13, series xi.; and the diseased vertebræ as No. 2, subs. 8c, series viii.

JOHN W. OGLE, M.D.

(*To be continued.*)

# REPORT OF THE MEDICAL CASES ADMITTED DURING THE YEAR 1866-67.

THE following report of the cases admitted into the medical wards of the Hospital during the year 1866 has been drawn up in accordance with a system of classification which has been in use for some time; and though the index under which the various cases are entered requires some additions, from the progress which the science of nosology has made since the classification was arranged, yet practically it has been found very well adapted for entering the ordinary cases met with in hospital practice.

The year 1866 was remarkable for an epidemic of cholera which visited most severely the east part of London. It was not very prevalent in the neighbourhood of the Hospital; and though two wards were specially set apart for cholera patients, very few cases were sent in. A short account of these, with the details of the post-mortem examinations, has been given.

A comparison of the table given at the end of this report with that compiled in a similar manner for the year 1865 (published in the first volume of these Reports) shows some difference in the number and fatality of acute cases admitted during the two years.

Taking them in the order in which they are there given, it will be seen that there were only two cases of typhus fever admitted during the year 1866, whereas during the previous year as many as fifty-nine cases were admitted; the number of typhoïd cases, on the other hand, was greater; scarlatina and erysipelas were not so prevalent.

The number of rheumatoïd affections of the joints appears to have been much less during the year 1866; the form, however, was more acute when compared with that which was prevalent during the year 1865; the number of cases of acute rheumatism being greater, and the complications of cardiac disease more frequent. It will be seen that in the present report some trouble has been taken to separate the various forms of rheumatism; and it must be observed that, until the protean varieties of this disease are distinguished and separated, statistics for comparing different modes of treatment will be utterly futile; and though it may be that the nosological distinctions are ill-defined, and the varieties of the disease run into each other very frequently, the

treatment that will benefit the patient must recognise the true origin of the variety.

Of acute pneumonia the number of cases admitted during this year was twice as large as that for the previous year, but the percentage of deaths was not so great. The chief object of such reports as the present being to afford statistics, the cases of acute pneumonia have been tabulated in such a manner as to render them available, it is hoped, to those who are investigating the subject. Of other, many and interesting, cases admitted during the past year, mention merely will be made, most of them having been already published in the medical journals of the year. It has been thought preferable to collect all cases of two or three kinds of disease to which special attention has lately been paid; these are lardaceous or amyloïd disease, pneumonia, and cholera.

The number of patients admitted into the Hospital was 1685. Of these, 195 died during the year 1866. Among the patients admitted was an extraordinary instance of hermaphroditism, and those that are curious in such monstrosities will find the case detailed at No. 1399 in the Register for 1866.

To avoid error as far as possible, little notice has been made of cases in which the diagnosis was not verified by post-mortem examination, except in the tabulated cases of pneumonia; and in this table only those cases have been recorded in which the physical signs were very marked and could hardly have been mistaken.

*Fevers.*—The cases of fever admitted during this year were chiefly cases of typhoïd; the epidemic of typhus, which had supplied many cases in 1865, having died out. Of the cases of typhoïd, one was remarkable from the patient having first been admitted with acute nephritis; subsequently he was re-admitted with typhoïd fever, the albuminuria being persistent. Having recovered from typhoïd, he was in ten days attacked with well-marked scarlatina, fresh inflammation was set up in the kidneys, and he died of an acute attack of pleurisy, with very rapid effusion. The urine was remarkable for containing, a little before death, a number of very large fibrinous casts, measuring three-eighths of an inch when seen by a quarter-inch object-glass. The case has been fully reported, with diurnal observations of temperature, in the *Lancet*.

Cases of hæmatinuria occur so infrequently that the following abstract of such a case may be interesting: A gardener, æt. 60, was admitted, who had been ill three months with pain in the back, in the loins, accompanied by shivering and sickness. This was followed (in about fifteen minutes after the cessation of the symptoms) by a discharge of urine of the colour of blood; after passing about half a pint, he was left weak, but otherwise well. He was distinctly affected by the weather; the symptoms being aggravated by cold. These symptoms recurred about twice in the week. One day, before admission into the hospital, he had passed blood and then vomited. Before the blood came, pain was experienced in the groin and in the left testicle, which occasionally swelled. On admission his aspect was

anæmic and sallow. He had some tenderness in the left loin, and on pressing the kidney between the hands this was increased; and there was also pain in the course of the ureter, and some swelling of the left testicle. The urine, on admission, was quite clear, plentiful, and natural; but a small quantity of albumen was found during his stay in the hospital. He was kept in bed, and a warm bath ordered, with an opium pill at night. The man was sent out, and in two weeks returned with a sample of urine of the colour of port-wine. No blood-corpuscles were found after a diligent search with the microscope, but numbers of crystals of hæmatin.

Two patients were admitted who died of *rupture of the heart*. In many points there was considerable difference in the symptoms of the two patients.

One was a woman, aged 47, who was admitted with dropsy, the result of cardiac and renal disease. As the dropsy was not diminished by the various drugs employed, acupuncture was resorted to. The woman seemed to be much frightened at this slight operation; and during its performance she was seized with faintness. She did not complain of pain, but became blue and pulseless. Acupuncture was performed at 7 P.M., and death was not complete until 10 P.M.; the death-struggle lasting half an hour.

After death the pericardium was found filled with large black clots of blood, which were found to come from a rent in the right ventricle; this rent was composed of three small holes, not large enough to admit the little finger, separated from each other by small bridges of muscular tissue, as if the heart had given way simultaneously in three places. The right ventricle was thin, the left rather thicker than natural. The structure was rotten, and under the microscope presented large quantities of oil-globules. The weight was 18½ oz.

The other patient was a man, aged 66, who was also admitted with dropsy, resulting from cardiac disease. He improved under treatment, but was frequently liable to transient attacks of faintness. While sitting at table taking his tea he suddenly fell back, and never spoke again. Death in this case took place in about three minutes. On opening the pericardium, it was found to be full of black blood, which came from a rent in the right ventricle. The two portions of the rent were separated from each other by a thin bridge of muscular tissue. There was a large discoloured clot in the right ventricle; the left ventricle was almost uncontracted and empty. The heart was very large and hypertrophied, its weight being 25½ ounces. Upon examining the structure microscopically, the muscular striæ were found to be well marked; but a number of oil-globules were seen floating between the muscular fibres. To the touch the structure felt rotten and greasy.

That form of disease which it has been the fashion to term amyloïd has been frequently found at the post-mortem examinations; and many instances have been admitted into the Hospital which were sent out as not likely to be further benefited by hospital treatment. The symptoms of this disease, since Dr. Grainger Stewart's investigations,

are so readily recognised that diagnosis in such cases is generally easy enough; but, to avoid error, the subjoined cases only are given in which the disease has been ascertained to exist by post-mortem examination. As the diagnosis of this disease is one of the most important additions to nosology of the present time, the many examples admitted into the surgical and medical wards of the Hospital, and examined after death, are detailed here; and a table has been drawn up to facilitate reference to these cases.

The surgical cases are taken from the notes of the surgical registrars, Mr. Thomas Pick and Mr. Ring.

*Amyloïd.*—Joseph C., æt. 12 years, was admitted with acute periostitis of the tibia, which had commenced six days before, with great pain and swelling. When admitted on the 25th of September 1865, there was a diffused swelling in front of the upper end of the tibia. There was much pyrexia; the skin hot, the tongue dry, the pulse 120. A free incision was made down to the bone, and a quantity of thin sero-purulent matter let out. After this he improved for a time, and then the matter began to burrow: there was much pain and redness all down the shin, and numerous abscesses formed. From this time fresh abscesses formed at intervals, and he gradually lost flesh. Early in December albumen was found in the urine; and from that time he began to sink rapidly, and died exhausted on the 9th January 1866.

The liver was found to be enlarged, fatty, and pale. The kidneys were pale, slightly enlarged, with adherent capsules and smooth surfaces. Iodine gave a trace of amyloïd reaction in the Malpighian bodies.

Benjamin T., æt. 32, was admitted on the 12th April 1865, with a large fluctuating swelling in the left inguinal region. After a time the skin over the swelling became thinner, and eventually burst. There was no history, nor appearance of disease of the spine; and, after the bursting of the abscess, dead bone was detected in connection with the ilium. The discharge continued, and he gradually became weaker; and he finally died on the 4th of February 1866, after an obstinate attack of diarrhœa.

The liver weighed 8 lbs. 8 oz.; was highly waxy; the reaction with iodine being well marked.

The kidneys gave the same reaction; weight, 14 oz. The spleen was also waxy.

John C., æt. 42, a pensioner, had been attacked with dysentery nine years before admission on the 7th February 1866. Eight weeks before admission vomiting had come on, and in two weeks he suffered much from distension of the stomach, with some œdema of the legs. This was followed by pain across the region of the liver, with much irritation of the bowels. When admitted, he was very weak and cachectic; he suffered from constant diarrhœa, the motions being plentiful, watery, yellow, shreddy, and very offensive. He had been a man of intemperate habits. The urine was examined, but was not found albuminous. He died on the third day after admission.

There was a large globular abscess in the right lobe of the liver, about five inches across. The rest of the organ was infiltrated with waxy deposit, giving the iodine reaction.

The kidneys were firm, and had a waxy look. The Malpighian bodies gave the reaction with iodine.

Maria Chalk, æt. 15, admitted on the 16th of August 1865, with a fluctuating tumour in the left groin. For six months previously she had suffered from pain and difficulty in making water, and six weeks before admission an abscess formed in the groin. The abscess finally burst and discharged abundantly, and the patient died from exhaustion on the 16th February 1866.

Disease of the pubes was found after death.

The kidneys were pale, the capsules adherent, the Malpighian bodies discoloured with iodine. Liver fatty, but otherwise natural. A few crude tubercles in the lungs.

Mary E., æt. 35, was admitted with symptoms of phthisis, which had only been observed nine months. She suffered from cough, with occasional hæmoptysis. Her face was puffy, sallow, and anæmic; tongue glazy and dry. The legs were extremely thin. She suffered from diarrhœa, the motions being light-coloured; urine slightly albuminous. A large vomica was discovered at the apex of the right lung and a smaller one in the left. On the 12th of March an attack of pericarditis came on, which terminated in death.

Both apices were excavated with large vomicæ. Pericarditis was found. The kidneys weighed 8½ oz.; the capsules thickened and adherent, the surfaces granular and uneven. Iodine gave the amyloïd reaction in the Malpighian bodies.

Thomas T., æt. 53, admitted with phthisis of eighteen months' duration, followed by sickness and diarrhœa of four months' date. On admission, on the 20th February, he was very pale and thin; cough severe; belly distended and tympanitic; tongue large, with a short yellow fur; urine of a pale straw-colour, and albuminous. Diarrhœa and vomiting. He died on the 17th of March.

The upper lobes of both lungs and the rest of the right lung infiltrated with masses of crude tubercle. No softening mentioned. The lining membrane of both auricles, the aortic valves, and the corpora Arantii, with the kidneys and liver, gave out a very dark colour on the application of iodine.

James S., æt. 19, was admitted with symptoms of phthisis of about fifteen months' date. For eleven months he suffered from diarrhœa of a very aggravated form; the stools being thin and yellow. The urine was found to be extremely albuminous, s. g. 1014, faintly acid with acid phosphate of lime, but no casts were discovered. He suffered from vomiting and severe diarrhœa. Tubercles were found at the apices of both lungs. The quantity of urine for twenty-four hours measured 27 oz. three weeks before death, and again the same quantity when subsequently examined. A small vomica was found at the apex of the right lung, and three small ones in the left. In the ilium were

found some sloughing ulcers. The kidneys were very waxy, and the same deposit was found in the intestines.

Euphemia A., æt. 65, admitted in an imbecile condition. No history could be obtained. The stools were passed in bed; the urine was examined several times, but no albumen was discovered. She gradually sank, and died in a week.

The brain was very watery, and two or three cysts of the size of a pea were found in the choroïd plexus; the lungs were œdematous and emphysematous.

The kidneys were granular, the Malpighian bodies being tinged brown with iodine.

Jesse R., æt. 52, was admitted with symptoms due to œsophageal cancer of four years' duration. The symptoms observed being due chiefly to cancer, it will be sufficient to remark that the urine, which was not albuminous two weeks before death, became very albuminous two days before death.

The kidneys were found to be granular, and the Malpighian bodies became of a red brown on the application of iodine.

Eliza F., æt. 40, was admitted, at the end of March, with phthisis of six years' duration. She suffered from night-sweats and hæmoptysis. The urine was not found to contain albumen. She died in a month after admission.

Several small vomicæ, containing fetid pus, were found in both lungs. The kidneys were slightly granular. Iodine tinged the Malpighian bodies brown.

Eliza K., æt. 28, had suffered from phthisis for nine months. A large vomica was discovered at the apices of both lungs. She suffered much from diarrhœa; the perspirations were profuse; the urine was not albuminous.

Large vomicæ in both lungs; kidneys slightly amyloïd.

Maude H., æt. 37, was admitted with rupial ulcers of two months' date. Under the use of cod-liver oil and the iodide of iron she improved at first, but subsequently the ulcers became foul, emitting a fetid odour, and she sank exhausted two months after admission.

The liver was fatty, and in an early stage of amyloïd degeneration. Kidneys healthy.

William W., æt. 33, had been ill with symptoms of phthisis for ten years. He suffered much from diarrhœa and profuse night-sweats. The urine was pale, and not albuminous. He died about two months after admission.

Numerous vomicæ were found in the lungs. The liver and kidneys gave no reaction with iodine. The intestines gave the brown colour.

John K., æt. 26, was admitted with compound luxation of the right ulna, produced by a fall; he had also disease of the wrist-joint, and symptoms of tubercles were found in the lungs. He sank rapidly from uncontrollable diarrhœa, after having been two months in the hospital.

A large ragged vomica was found in the right lung. Suppuration

in the wrist-joint. The liver showed slight traces, the spleen more, and the kidneys very marked signs of amyloïd. The intestines were also diseased.

Joseph S., æt. 40, who gave an account of having had symptoms of phthisis for three years, was admitted with symptoms of acute pneumonia. He was in the hospital only one day, and during that time the bowels were loose, the motions being shreddy yellow fluid, and very offensive. The urine was not obtained for examination. At the apex of the left lung was a small vomica, and numerous masses of crude tubercle. Both the liver and the kidneys gave evidence of the presence of amyloïd matter with iodine.

George G., æt. 29, had suffered from pain in the back five weeks before admission on the 19th July 1865. When seen, he had slight fulness in the sacral region of the spine, and there was much pain there. There was no loss of motion of the lower extremities. Subsequently abscesses formed, and he died, exhausted by the discharge, on the 5th of August 1866.

Strumous disease of the hip-joint. The liver was in an advanced stage of amyloïd degeneration; its weight was 130 oz. The spleen was large, and also amyloid. The kidneys coarse, pale, and waxy-looking. The Malpighian bodies gave the amyloïd reaction with iodine.

Louisa W., æt. 43, was admitted on the 7th of February with a hard tense swelling in the right side of the abdomen, which had appeared three weeks previously. This swelling gradually softened and burst. She died on the 8th of May.

Disease of the ilium was found after death. The kidneys were amyloïd.

Edward D., æt. 19, was admitted with angular curvature of the spine and paraplegia, attributed to an injury received some years before. The presence of tubercle was found in the lungs. He was suddenly seized with hæmoptysis, and he died after having been in the hospital seven months.

Acute pleurisy, with effusion, and a vomica at the right apex, were found after death. The liver was in a state of commencing amyloïd degeneration, being slightly acted upon by iodine.

Mary D., æt. 48, was admitted with phthisis of about six years' date. On admission she had all the appearance of amyloïd disease. She suffered from great thirst, and occasional attacks of diarrhœa. The urine was pale, very plentiful, and contained a very large quantity of albumen. There was some vomiting. She died exhausted by diarrhœa, after three weeks' treatment in the hospital.

A large ragged vomica was found in the left apex. The kidneys underwent a slight change with iodine; the intestines were in an advanced stage of the disease.

Robert N., æt. 20, admitted in the last stage of consumption, gave a history of only four months' illness. He was remarkably pale; he suffered much from thirst; his legs were œdematous; the urine was

very abundant, pale, and contained a large quantity of albumen. He died in two weeks.

Vomicæ were found in the lungs. The liver weighed 63 oz.; was pale, soft, and gave a well-marked reaction with iodine. The intestines, the stomach, and the kidneys gave the same reaction. The left kidney was much larger than the right—the former weighing 10½ oz., the latter 8¾ oz.

Frederick N., æt. 46, a potman, gave a history of previous pleurisy in 1851. Rheumatoïd symptoms one year before admission; he had been out-patient for six months with diarrhœa, vomiting, and pain in going to stool. When he came into the hospital he was thin, strange in manner, of a waxy, yellow, exsanguine complexion; conjunctivæ yellow, appetite bad, legs slightly stiffened at the joints, no sweats, no history of suppuration, but of intemperance; the liver was remarkably small. The urine measured about 48 oz. in the twenty-four hours; s. g. 1010; no albumen. He suffered from diarrhœa, and the stools were of a light-brown and shreddy. During his stay in the hospital the legs became swelled, the lungs became œdematous, and he died convulsed.

After death, old cicatrices were found at the apices of the lungs. The kidneys were found in a state of granular degeneration; and the intestines (and these organs only) gave the amyloïd reaction with iodine.

William Prew, æt. 29, had suffered from an abscess in the back for two years and a half, during which time he had been losing flesh. A month before admission a swelling commenced in the abdomen. He was found to have tubercles on the lungs. The abscess burst, the discharge weakening him so much that he died a very short time after.

A psoas and lumbar abscess, from disease of the spine, was discovered after death. Both lungs were riddled with tubercles. The kidneys and intestines underwent a well-marked amyloïd reaction with iodine.

John J., æt. 53, was admitted, giving a history of phthisis for the last two years. For five weeks before admission he had been losing flesh very rapidly. He was much emaciated when seen. Tubercles were discovered in both lungs; the legs were not œdematous; the urine was very albuminous, but scanty, not more than 32 oz. Towards the close of his life the legs swelled, he assumed a very waxy look, but he suffered neither from vomiting nor diarrhœa. The urine remained albuminous to the end (s. g. 1015). One or two hyaline casts were found.

Tubercles and vomicæ were found in the lungs. The kidneys were large, and exhibited a well-marked reaction with iodine.

Of the few cases of cholera admitted the following are worth recording:

*Cholera.*—James W., æt. 58, was brought in by the police in a state of collapse. He had been out of work, and had been troubled with

diarrhœa for some days before. He had all the symptoms of a severe attack of cholera. He was treated with gr. iv. of calomel every hour. The bowels were very much purged. He died in thirteen hours after admission, having been ill for three days. The body was examined eight hours and a half after death. Rigor mortis was well marked.

The lungs were full of black fluid blood. Their weight together was 27½ oz. The left side of the heart was contracted and empty; the right side uncontracted, and contained a decolorised clot.

The blood was universally fluid and thin.

The mucous membrane of the intestines was much congested, and the superficial vessels were enlarged; on the surface were a number of minute extravasations.

The intestines contained a thick, tenacious, slightly yellowish fluid, which much resembled laudable pus; this was found to consist of columnar epithelium and mucus.

George G., æt. 11, was seized with diarrhœa while working at Bow; brought to the hospital in four hours in a state of collapse: skin cold, face livid, rice-water stools, and vomiting. A dose of calomel and opium was given immediately. Afterwards subcutaneous injections of Battley's liquor (mv.) were administered every six hours, with relief to the pain, but the other symptoms continued more or less for seven days. He was convalescent on the eleventh day.

Emma Y., æt. 25, admitted into the hospital on the fourth day of illness, suffering from vomiting and purging, with cramps and pains; rice-water evacuations. The treatment consisted principally in giving brandy and ice. The diarrhœa ceased on the sixth day. She was sent out on the twenty-seventh day.

Amelia K. was brought into the house in a state of collapse after a few hours' illness. Brandy and ammonia were administered: no purging or vomiting were observed at any time. She died in two hours, having been ill seventeen hours.

The body was examined twenty-one hours after death. Rigor mortis not very marked.

The blood was of the consistence of treacle.

The lungs weighed 16 oz.; the posterior part of both lungs was solid.

The left ventricle of the heart was partially contracted, the right was uncontracted. There was a partially decolorised clot in the right ventricle.

The mucous membrane of the small intestines was uninjected; the gut contained pale yellowish fluid, rather more bile-stained and viscid than natural.

The fluid presented the usual appearance of columnar epithelium.

Thos. G. was brought into the hospital in a state of collapse, having been ill for two days. He was ordered a mustard emetic, which excited free vomiting, and brandy and ammonia were administered. Sulphurous acid was also given every second hour. He died in nine hours after admission.

The body was examined twenty-nine hours after death. The rigor mortis was exceedingly well marked. The lungs were slightly congested at the lower and posterior part. Blood of the consistence of currant-jelly was found in the pulmonary veins. The weight of the two lungs was 40 oz. The heart was uncontracted, and contained no clots. The blood was generally fluid; in places there were semi-solid clots, but firm coagulation was found nowhere. Spleen natural.

The small intestines were slightly injected, and full of yellowish watery sero-purulent fluid; this was found to consist of granular matter and epithelial cells.

Edward N., æt. 51, was brought into the house in a state of collapse after one day's illness. He was purged previous to admission, and suffered from frequent vomiting. He was treated with brandy, ice, and calomel. The vomiting and purging stopped four hours before death, eight hours after admission.

The body was examined fifteen hours after death. Rigor mortis was very well marked. The lungs weighed 30½ oz.: they were congested. The pulmonary arteries contained no clot, but a little viscid dark blood. The left ventricle of the heart was closely contracted, the right quite flaccid; there was a small clot in the right side and in the large vessels.

The intestines were very vascular: they were full of thick purulent-looking matter consisting of epithelium cells.

Ellen M., æt. 15, was taken ill on the day of admission with the usual symptoms of cholera. On admission she was cold, sick, and purged frequently; the stools, however, were like pea-soup. She was treated with brandy and ammonia salines, and was convalescing on the fifth day. On the sixth an erythematous rash was observed on the arms, in solitary maculæ about one line in diameter, round, rose-coloured, and in places elevated like urticaria. This eruption disappeared in two days.

Luke G., age 25, was admitted on the sixth day of illness. No vomiting or purging took place after his admission, and he had all the appearance of a man recovering from an attack of cholera.

## TABLE I.

*Table of Cases admitted into the Medical Wards of St. George's Hospital during the Year ending December 31st, 1866.*

| Nature of disease. | Total number admitted. | Total number of deaths. | Percentage of deaths. | Complicated with other diseases. | Deaths among complicated cases. | Observations. |
|---|---|---|---|---|---|---|
| 1. Cholera | 12 | 6 | 50 | 1 | 1 | Four of the patients died on the day of admission. |
| Typhus | 2 | | | | | |
| Typhoid | 26 | 4 | 15·4 | 1 | 1 | |
| Febricula | 16 | | | | | |
| 2. Measles | 8 | | | | | |
| Scarlatina | 20 | 2 | 10 | 3 | 1 | |
| Roseola | 2 | | | | | |
| Variola | 3 | . . | . . | . . | . . | Removed to Small-pox Hospital. |
| Erysipelas | 11 | 1 | 9 | 3 | 1 | |
| 3. Intermittent Fevers: | | | | | | |
| Quotidian | 2 | | | | | |
| Tertian | 2 | | | | | |
| Quartan | 1 | | | | | |
| Irregular | 3 | | | | | |
| 4. Rheumatism: | | | | | | |
| Acute | 66 | . . | . . | 34 | . . | Thirty-two of these were heart-complications. |
| Chronic | 46 | . . | . . | 7 | . . | All these were heart-complications. |
| Subacute | 51 | . . | . . | 7 | . . | Three of these were heart-complications. |
| Gonorrhœal | 14 | | | | | |
| Syphilitic | 5 | | | | | |
| Post-Scarlatinal | 1 | | | | | |
| 5. Gout | 30 | 1 | 3·3 | 12 | 1 | |
| Rheumatoid arthritis | 42 | . . | . . | 10 | | |
| 6. & 7. Poisoning: | | | | | | |
| Irritant | 1 | | | | | |
| Narcotic | 1 | 1 | 100 | | | |
| Syphilitic | 21 | . . | . . | 1 | | |
| Gonorrhœal | 7 | . . | . . | 1 | | |
| Metallic | 23 | 3 | 13 | 12 | 3 | |
| Alcoholic | 13 | 1 | 7·7 | 1 | 1 | |

| Nature of disease. | Total number admitted. | Total number of deaths. | Percentage of deaths. | Complicated with other diseases. | Deaths among complicated cases. | Observations. |
|---|---|---|---|---|---|---|
| Poisoning—*cont.* | | | | | | |
| Animal | 2 | | | | | |
| Pyæmia | 6 | 4 | 66· | | | |
| 8. Entozoa: | | | | | | |
| Intestinal worms | 3 | . . | . . | 3 | | |
| Hydatid | 2 | 2 | 50 | 2 | 2 | |
| 9. Dropsies: | | | | | | |
| Anasarca | 57 | 17 | 29 | | | |
| Ascites | 13 | 3 | 23 | 2 | 1 | |
| 10. Hæmorrhages: | | | | | | |
| Epistaxis | 1 | | | | | |
| Hæmoptysis | 9 | 1 | 11 | 6 | 1 | |
| Hæmatemesis | 3 | . . | . . | 2 | | |
| Hæmaturia | 2 | | | | | |
| Hæmatinuria | 1 | | | | | |
| General hæmorrhage | 1 | 1 | 100 | | | |
| Uterine | 4 | | | | | |
| 11. Purpura | 1 | 1 | 100 | 1 | 1 | |
| 12 & 13. Anæmia | 19 | | | | | |
| 14. Cachæmia | 12 | | | | | |
| 15. Scrofula | 3 | | | | | |
| 16. Tubercular diseases: | | | | | | |
| Phthisis pulmonalis | 121 | 23 | 19·8 | 58 | 16 | |
| Tabes mesenterica | 11 | 2 | 18 | | | |
| Tuberc. meningitis | 5 | 2 | 40 | | | |
| Phthisis laryngeal | 2 | | | | | |
| 17. Morbid growths: | | | | | | |
| Encephaloid | 1 | | | | | |
| Scirrhus | 4 | 2 | 50 | | | |
| Epithelial | 2 | 2 | 100 | 2 | 2 | |
| Abdominal | 16 | 6 | 37 | 1 | | |
| 18. Hysteria | 25 | | | | | |
| Mania | 9 | 2 | 22 | | | |
| 19. Chorea | 22 | . . | . . | 1 | | |
| 20. Delirium tremens | 14 | 1 | 7 | 6 | | |
| 22. Diseases of brain and chord: | | | | | | |
| Encephalitis | 10 | 1 | 10 | | | |
| Functional disturbance | 3 | | | | | |
| Apoplexy | 9 | 7 | 66 | | | |
| Epilepsy | 18 | 2 | 11 | 6 | 2 | |
| Hydrocephalus | 1 | 1 | 100 | | | |
| Abscess | 1 | 1 | 100 | | | |
| 23. Paralysis: | | | | | | |
| Hemiplegia | 18 | 1 | 5·5 | | | |
| Paraplegia | 14 | 1 | 7 | 2 | | |
| Local | 12 | 1 | 8·3 | 2 | | |
| Wasting palsy | 2 | 1 | 50 | 1 | 1 | |
| Paralysis agitans | 1 | | | | | |

| Nature of disease. | Total number admitted. | Total number of deaths. | Percentage of deaths. | Complicated with other diseases. | Deaths among complicated cases. | Observations. |
|---|---|---|---|---|---|---|
| 24. Neuralgia: | | | | | | |
| Sciatica | 19 | . . | . . | 1 | | |
| Lumbago | 5 | . . | . . | 3 | | |
| Neuralgia of other parts | 9 | | | | | |
| 25. Diseases of heart: | | | | | | |
| Pericarditis | 19 | 6 | 31·5 | 15 | 5 | |
| Adherent pericardium | 4 | 1 | 25 | 2 | | |
| Hypertrophy | 7 | 3 | 42 | 6 | 3 | |
| Dilatation | 5 | 2 | 40 | 3 | 1 | |
| Valvular disease | 102 | 29 | 28·4 | 83 | 27 | |
| Fatty degeneration | 8 | 6 | 75 | 3 | 2 | |
| 26. Diseases of blood-vessels: | | | | | | |
| Aneurism | 8 | 3 | 37·5 | | | |
| Phlebitis | 4 | 1 | 25 | | | |
| Atheroma | 3 | 3 | 100 | 2 | 2 | |
| Embolism | 2 | 1 | 50 | 2 | 1 | |
| Thrombus | 1 | 1 | 100 | | | |
| 27. Diseases of respiratory organs: | | | | | | |
| Laryngitis | 4 | . . | . . | . . | . . | Laryngotomy performed in one of these cases. |
| Tracheitis | 2 | 2 | 100 | . . | . . | Laryngotomy in one case. |
| Bronchitis | 74 | 13 | 17·5 | 28 | 9 | |
| Emphysema | 22 | 5 | . . | 11 | 4 | |
| Pneumonia | 81 | 16 | 19·7 | 32 | 8 | |
| Pleurisy | 58 | 4 | 7 | 18 | 4 | |
| Empyema | 2 | 2 | 100 | 2 | 2 | |
| Pneumothorax | 3 | 2 | 66 | 2 | 2 | |
| Congestion | 3 | . . | . . | 1 | | |
| Asthma | 1 | | | | | |
| Pulmonary apoplexy | 1 | 1 | 100 | 1 | 1 | |
| Fibroid disease (?) | 2 | | | | | |
| 28. Diseases of mouth and pharynx: | | | | | | |
| Stomatitis | 1 | | | | | |
| Glossitis | 1 | | | | | |
| Quinsy | 25 | | | | | |
| Ulceration | 10 | 1 | 18 | 1 | 1 | |
| Goitre | 1 | | | | | |
| 29. Diseases of the stomach: | | | | | | |
| Dyspepsia | 40 | . . | . . | 1 | | |
| Cancer | 2 | | | | | |
| Ulcer | 1 | | | | | |
| Gastritis | 1 | | | | | |

| Nature of disease. | Total number admitted. | Total number of deaths. | Percentage of deaths. | Complicated with other diseases. | Deaths among complicated cases. | Observations. |
|---|---|---|---|---|---|---|
| 30. Diseases of intestinal canal: | | | | | | |
| Diarrhœa | 9 | | | | | |
| Obstruction | 4 | | | | | |
| Constipation | 12 | | | | | |
| Ulceration | 3 | 2 | 66 | 2 | 2 | |
| Dysentery | 2 | 2 | 100 | | | |
| Enteritis | 7 | | | | | |
| Perforation | 2 | 1 | | | | |
| 31. Diseases of peritoneum: | | | | | | |
| Acute peritonitis | 8 | . . | . . | 5 | | |
| Chronic | 1 | 1 | . . | 1 | 1 | |
| 32. Diseases of liver and gall-bladder: | | | | | | |
| Cirrhosis | 18 | 6 | 33 | 14 | 6 | |
| Jaundice | 13 | . . | . . | 1 | | |
| Enlargement | 8 | . . | . . | 3 | | |
| Abscess | 5 | 3 | 60 | 1 | 1 | |
| Cancer | 2 | | | | | |
| Gall-stones | 4 | 1 | 25 | | | |
| Hepatitis | 5 | | | | | |
| Congestion | 3 | | | | | |
| Lardaceous | 12 | 4 | 33 | 7 | 4 | |
| 33. Diseases of pancreas: | | | | | | |
| Cancer | 1 | | | | | |
| 34. Diseases of spleen | 1 | 1 | 100 | | | |
| 35. Diseases of kidneys and bladder: | | | | | | |
| Nephritis (acute) | 4 | | | | | |
| „ (chronic) | 21 | 5 | 24 | 16 | 5 | |
| Granular kidneys | 24 | 12 | 50 | 17 | 9 | |
| Albuminuria | 68 | 15 | 22 | 52 | 15 | |
| Calculus | 5 | | | | | |
| Pyelitis | 2 | | | | | |
| Lardaceous | 12 | 6 | 50 | 9 | 6 | |
| Hæmatinuria | 1 | | | | | |
| Cystitis | 6 | 1 | 15 | 2 | | |
| Paralysis of bladder | 1 | | | | | |
| 36. Diabetes | 8 | 2 | 25 | 1 | 1 | |
| 37. Ovarian disease: | | | | | | |
| Tumour | 1 | | | | | |
| Dropsy | 4 | | | | | |
| 38. Diseases of uterus, &c.: | | | | | | |
| Inflammation | 4 | . . | . . | 1 | | |
| Hypertrophy | 1 | | | | | |
| Prolapsus | 2 | | | | | |
| Leucorrhœa | 7 | | | | | |
| Menorrhagia | 5 | | | | | |
| Amenorrhœa | 4 | | | | | |

| Nature of disease. | Total number admitted. | Total number of deaths. | Percentage of deaths. | Complicated with other diseases. | Deaths among complicated cases. | Observations. |
|---|---|---|---|---|---|---|
| 38. Diseases of uterus, &c.—*continued.* | | | | | | |
| Dysmenorrhœa . | 1 | | | | | |
| Pregnancy . . | 3 | | | | | |
| Abortion . . | 1 | | | | | |
| Pelvic abscess . | 6 | 2 | 33 | | | |
| External organs . | 2 | | | | | |
| 39. Diseases of bones . | 28 | 2 | 7 | 6 | 1 | |
| 40. Diseases of skin . | 29 | . . | . . | 4 | | |
| 41. Anomalous and accidental . . | 4 | | | | | |

## TABLE II.

*A Table of the Cases where Lardaceous or Amyloïd Degeneration was discovered after death.*

| Name. | Age. | Nature of disease. | Duration. | Symptoms. | Organs in a state of amyloid degeneration. |
|---|---|---|---|---|---|
| Joseph C. | 12 | Periostitis and subsequent abscesses. | 131 days. | Albuminuria one month before death. | Kidneys, Malpighian bodies. |
| Benjamin J. | 32 | Pelvic abscess. | 297 days. | Diarrhœa. | Liver, spleen, and kidneys in an advanced state. |
| John C. | 42 | Dysentery. Abscess of liver. | 9 years. | Diarrhœa. No albumen three days before death. Previous, œdema of the legs and vomiting. Stools yellow, shreddy, and very offensive. | Liver in an advanced state, kidneys less affected. |
| Maria C. | 15 | Disease of the pubes and abscess. | 12 months. | . . . . . | Kidneys slightly affected. |
| Mary E. | 35 | Phthisis. Large vomicæ. | 10 months. | Diarrhœa. Albuminous urine. Pericarditis. Stools light-coloured. | Kidneys. |
| Thomas J. | 53 | Phthisis. Crude tubercle. | 19 months. | Diarrhœa. Vomiting. Tympanitic distension of belly. Albuminous urine. | Lining membrane of both auricles, aortic valves, corpora Arantii, kidneys, liver. |
| James S. | 19 | Phthisis, and diarrhœa from ulcers of the bowel. Small vomicæ. | 18 months. | Diarrhœa. Vomiting. Urine very albuminous; s. g. 1014; quantity about 27 oz. No casts. | Kidneys and intestines. |
| Euphemia A. | 65 | Granular kidneys. | Uncertain. | Urine not albuminous. | Kidneys slightly affected. |
| Jesse R. | 52 | Œsophageal cancer. | 4 years. | Urine not albuminous until two days before death. | Kidneys slightly affected. |
| Eliza F. | 40 | Phthisis. Small vomicæ. | 6 years. | No albumen in the urine. | Kidneys. |

| | | | | | |
|---|---|---|---|---|---|
| Eliza K. | 28 | Phthisis. Large vomicæ. | 10 months. | Diarrhœa. No albumen in the urine. | Kidneys slightly affected. |
| Louisa W. | 43 | Disease of the ilium and abscess. | ? 4 months. | . . . . . | Kidneys. |
| Edward D. | 19 | Fractured spine. Phthisis. A vomica in right apex. | Uncertain. | . . . . . | Liver. |
| Joseph S. | 40 | Pneumonia. Phthisis. A vomica in left apex. | 3 years. | Diarrhœa. Stools yellow, fluid, containing shreddy mucus, and very offensive. | Liver and kidneys. |
| George G. | 29 | Strumous disease of hip-joint. Abscesses. | 14 months. | . . . . . | Liver in an advanced stage, spleen and kidneys. |
| Maude H. | 37 | Rupial ulcers. | 4 months. | . . . . . | Liver slightly. |
| William W. | 33 | Phthisis. | 10 years. | Diarrhœa. Urine pale; not albuminous. | Intestines. |
| John K. | 26 | Phthisis. Vomica. Suppuration of wrist-joint. | Uncertain. | Diarrhœa. | Liver, spleen, kidneys, intestines. |
| Eliz. C. | 29 | | | | |
| Mary D. | 48 | Phthisis. Vomica. | 6 years. | Diarrhœa. Vomiting. Urine abundant, very pale, and albuminous. Much thirst. | Kidneys and intestines. |
| Robert N. | 20 | Phthisis. Vomicæ. | 4½ months. | Œdema of the legs. Much thirst. Urine pale, plentiful, and very albuminous. | Liver, kidneys, intestines, and stomach. |
| Mary M. | | | | | |
| Frederick N. | 46 | Granular kidneys. | 7 months. | Diarrhœa. Loose, light, and shreddy stools. Urine not albuminous. | Intestines. |
| William P. | 29 | Psoas and lumbar abscess. | 2½ years. | . . . . . | Kidneys and intestines. |
| John J. | 53 | Vomicæ and tubercles of the lungs. | 2 years. | Urine very albuminous; s. g. 1015; quantity 32 oz. Legs œdematous. | Kidneys. |

## TABLE III.

*A Table of some of the Cases of Acute Pneumonia admitted into the Hospital during the Year* 1866.

| Name. | Age. | Date of admission. | State of lung on admission. | Treatment. | Duration. |
|---|---|---|---|---|---|
| William E. | 23 | Jan. 13. | Upper quarter of right lung solid. Crepitations below this. Left lung free. | Antimonial wine 3j. every four hours for five days. | 60 days. |
| William P. | 24 | „ 4. | Pleurisy and consolidation of lower two-thirds of left lung. Crepitations over lower quarter of right. | V.S. to ʒxij. Calomel gr. ij.; ant. gr. ½; opii gr. ¼ every six hours for five days. | 22 days. |
| Susan M. | 26 | „ 9. | Consolidation of right lung. Effusion at the lower half of the lung. | Potass. iodidi gr. v., with ext. cinchonæ ter die. | 37 days. |
| Henry S. | 33 | „ 3. | Crepitations at the base of both lungs. Bronchitis. | Antimony gr. ¼ every six hours for thirteen days. | 47 days. |
| James F. | 36 | „ 6. | Consolidation of upper two-thirds of left lung. | Ammonia salines. | 27 days. |
| Ann N. | 42 | Feb. 13. | Consolidation of right lung, with effusion at lower third. | Calomel gr. ij.; opii ℥ß, ter die for five days. | 55 days. |
| William H. | 28 | Mar. 8. | Crepitations over the lower two-thirds of right lung. Commencing consolidation of upper third. | Antimony gr. ¼ quartis horis; calomel gr. iij. ter die for twelve days. | 26 days. |
| Mary W. | 38 | „ 11. | Crepitations over lower quarter of right lung, with effusion at lowest eighth. | Bark and wine. | 28 days. |
| Patrick R. | 24 | „ 5. | Consolidation of upper half, crepitation of lower half of right lung. | Antimonial wine 3j. quartis horis; cupping to ʒviij. for three days, and continued three times a day for ten days. | 19 days. |
| William G. | 37 | „ 3. | Consolidation of lower half of left lung. | Antimonial wine 3ß quartis horis (with brandy) for three days, twice a day for four days. | 23 days. |
| George S. | 37 | „ 8. | Pleurisy. Consolidation of lower two-thirds of left lung. | Antimonial wine ℥xl. quartis horis for three days, ℥xxv. for three days. | 33 days. |

| | | | | | |
|---|---|---|---|---|---|
| Thomas B. | 25 | April 6. | Pleurisy. Consolidation of upper third of right lung. | Antimony gr. ½ quartis horis for six days. | 13 days. |
| William S. | 38 | „ 22. | Consolidation of upper two-thirds of right lung. | Magnesiæ sulphatis 3ij. quartis horis for four days. Quinine after this. | 22 days. |
| John H. | 37 | May 15. | Consolidation of upper half, with slight effusion and pleurisy of lower half of right lung. | Antimonial wine 3ß quartis horis; brandy ℥v. for four days, ♏xv. for eight days. | 28 days. |
| Thomas K. | 20 | „ 6. | Left lung solid, with effusion at lower third. | Tinc. digitalis ♏xx. and antimonial wine 3ß quartis horis for two days, ter die for one, and without digitalis two days. | 25 days. |
| Emma P. | 14 | „ 8. | Solid left lung, with some pleurisy. | Antimony. | 30 days. |
| Andrew F. | 21 | „ 5. | Pleurisy of lower half, solid upper half of left lung. | Tinct. digitalis ♏xv.; antimonial wine 3ß quartis horis for four days, with calomel gr. iij. ter die for two days. | 27 days. |
| John B. | 22 | „ 3. | Consolidation of upper half of left lung. | Cupping to ℥xij. Antimonial wine 3j. quartis horis for six days, ♏xl. for four days, and ℥vj. of brandy. | 33 days. |
| Charles P. | 18 | „ 3. | Pleurisy and crepitation at lowest eighth of left lung. | Cupping to ℥viij. Antimonial wine 3j. for seven days. | 11 days. |
| George A. | 50 | „ 5. | Upper two-thirds of left lung in the first stage. Pleurisy. | Pil. hyd. gr. iij. ter die; antimonial wine 3ß sextis horis for three days, ♏xx. five days. | 42 days. |
| Joseph T. | 33 | „ 8. | Pleurisy and pneumonia in second stage of the lower two-thirds of left lung. | Gin and nitre. Blisters. | 38 days. |
| Eliz. J. | 20 | „ 7. | Lower lobe of right lung in first stage. | Acetate of ammonia. | 32 days. |
| Daniel P. | 20 | „ 4. | Consolidation of the whole of the left lung. | Calomel gr. ij.; opii gr. ½ four times a day. | 37 days. |

## *Cases of Pneumonia (fatal).*

| Name. | Age. | Date of admission. | Amount of lung involved on admission. | Treatment. | Duration. | Post-mortem appearances. |
|---|---|---|---|---|---|---|
| Mary F. | 18 | 11th day. | Right upper lobe solid. | Tartar emetic gr. ¼ every four hours. | 14 days. | Right upper lobe in gray hepatisation; lower lobe congested. Bronchi full of pus. |
| Robert L. | 24 | 2d day. | Right lung first stage below, second stage above. | Antimonial wine in xlvm doses quartis horis. | 10 days. | Right lower lobe natural; upper lobe gray hepatisation; left in a state of gray hepatisation. |
| Walter C. | 22 | 4th day. | Right lung upper half consolidated. | Antimonial wine in ʒj. doses quartis horis. | 6 days. | Right lung solid throughout, and nearly gray. |
| Eliza C. | 36 | 30th day. | Left lung in a state of gray hepatisation. | Carbonate of ammonia. | 31 days. | Left lung, gray hepatisation. |
| Benjn. H. | 36 | 2d day. | Acute pleurisy and commencing pneumonia of the lower lobe of right lung. | V.S. ad ʒxij.; cupping to ʒv. Calomel and opium sextis horis. | 18 days. | Pleurisy. Tubercle. Solidification of the right lung. Abscess bursting into the pleura. |
| Joseph H. | 40 | 7th day. | Tubercles and solidification of upper lobe of right. | Carbonate of ammonia. | 8 days. | Tubercles and gray hepatisation of upper right lobe. |
| William P. | 8m. | 8th day. | Both lower lobes solid. | Tartar emetic in small doses. | 9 days. | Both lower lobes solid. |
| John C. | 57 | 15th day. | Upper lobes of both lungs solidified. | Salines and wine. | 35 days. | Right lung solid; gray hepatisation of upper lobe. Left lung solid. Crude tubercle. |

REGINALD E. THOMPSON, M.D.

# ANNUAL REPORT OF THE SURGICAL CASES TREATED IN THE HOSPITAL DURING THE YEAR 1866.

THE Report for the past year is framed on the same plan as that of the year 1865, which was compiled by my predecessor, Mr. T. Pick. The injuries and diseases are considered under the same heads, and as the treatment adopted in the various cases has not materially altered, there must necessarily be a good deal of repetition.

Two thousand one hundred and fifty-three cases were admitted into the surgical wards; of which number forty-nine were transferred from the medical wards, having been in the first instance admitted into them for some medical disease. Thirty-one cases were, on the other hand, sent to the physicians from the surgical wards, principally for lung-disease, which in most instances existed before the admission of the patient into the hospital. One case of scarlatina occurred in a patient after the removal of a mammary tumour. Injuries and diseases form the two grand sections into which all the cases are divided. These again are subdivided: the *injuries* into (1st) general injuries, *e. g.* burns and scalds; and (2d) local injuries, *e. g.* of the head, extremities, &c.; and the *diseases* into (1st) general diseases, *e. g.* gangrene, pyæmia, &c.; and (2d) the special diseases of the various organs of the body.

The scope of the present work permits only of a short account of many interesting cases; for details the reader is referred to the case-books, the number in which is affixed to each case, with the initial letter of the surgeon's name under whose care they were admitted, as the notes are bound in separate volumes, which contain the cases of each surgeon. Reference is made to the post-mortem book and to our statistics of hernia, amputation, compound fracture, and stone.

GENERAL INJURIES.—Twenty-six *burns* and thirty-four *scalds* were admitted, and seven in each class died. The greater number of cases occurred in children, either from their playing with fire, or upsetting hot water over themselves from kettles, teapots, cups, &c. Epileptic fits were not an unfrequent cause in adults. One young woman was burnt to death through wearing crinoline, her clothes, distended by it, becoming ignited. Of the seven fatal burns, several died from collapse, one of delirium tremens, one of erysipelas, and one of tetanus; this last case occurred in a woman æt. 34, who in a state of intoxication accidentally set her clothes on fire. The injury was severe, the lower limbs and part of the abdomen being much

burnt. She complained of stiffness of the neck and throat on the sixth day. The $\frac{1}{12}$th of a grain of extract of woorara was subcutaneously injected, but the spasms became very frequent and severe, and she died two days later. (457, L.)

In only one case a post-mortem examination was made.* Death occurred three days after admission. The brain and kidneys were found congested. (See P. M. Book, No. 211.) The treatment in all cases consisted in dressing the surface with calamine ointment, or carron-oil, and covering it with cotton wool; in giving anodynes to allay pain, with stimulants and generous diet to sustain the strength. Where sloughs formed, a stimulating ointment, *e. g.* unguentum viride of the Hospital pharmacopœia, was applied.

INJURIES OF THE HEAD.—Of these there were one hundred and sixty-one cases. Fifty-six of these were simple *scalp wounds*, not exposing the bone; in many of these there were other injuries which necessitated their admission. Three were attacked with erysipelas. There were no deaths.

There were twenty-eight *scalp wounds* in which the bone was exposed. One died of pyæmia following diffuse inflammation. (1820, L.)

The scalp was found separated from the cranium for a considerable extent, the diploë infiltrated with pus, which existed also between the bone and dura mater, and within the cavity of the arachnoïd; there were secondary deposits in the lungs. (See P. M. Book, No. 324.)

Thirty-six cases of *concussion* were admitted, many of them complicated with other injuries: they all recovered.

There were six cases of *simple fracture* of the skull; and of these three were brought in dead, and the others died two or three days after their admission.

Seven cases of *compound fracture* were admitted; six died. In one the operation of trephining was performed, and in another some loose and depressed bone was removed: both died. One was the case of a groom who was thrown from his horse. He was insensible and much collapsed. There was a wound leading from the inner canthus of the right eye obliquely across the forehead to the left coronal suture; the bone was exposed, comminuted, and depressed. On enlarging the wound, the whole of the left half of the frontal bone was found to be depressed; it was removed. The dura mater was lacerated at the outer side, and at this point brain-matter escaped. The man died in a few hours. (357, T.)

The other patient had had the skull driven in by a brick falling on his head; a portion of the parietal bone was depressed. The bone was trephined, and the depressed portion elevated. He did well for four days, when rigors, sweating, and delirium set in, and he died on the eighth day. (1317, T.) On examining the body, a portion of the

* The absence of post-mortem examinations in severe accidents, where the legal cause of death is not doubtful, is a consequence of arrangements insisted upon by the coroner.

inner table of the right parietal bone was found projecting through the dura mater, and pressing on the brain; the right posterior lobe was broken down, and full of pus, as was also the middle cornu of the lateral ventricle: these abscesses communicated with the external wounds. A small abscess, surrounded by spots of ecchymosis, also existed in the left posterior lobe. (See P. M. Book, No. 250.)

One patient was admitted with a comminuted fracture of the supra-orbital arch. He died of meningitis: after death a rupture of the liver was found. (1410, H.) At the post-mortem, there was found a comminuted fracture of the supra-orbital arch, extending backwards to the roof of the orbit and horizontal plate of the ethmoïd, which was driven in and extensively comminuted. The right anterior lobe of the brain was bruised. The crus, pons Varolii, and medulla were smeared with pus and lymph; and both in the arachnoïd and sub-arachnoïdean spaces the deposit could be traced some distance down the cord. There was a large quantity of serum, with flakes of purulent lymph in the lateral, third, and fourth ventricles. The fornix, septum lucidum, and central parts of the brain were softened. There was a large quantity of fluid blood in the peritoneal cavity. A small portion of the right lobe of the liver was almost torn off, being connected to the rest of the organ by a thin bridge of hepatic tissue. The other organs were natural. (See P. M. Book, No. 259.) One died of pyæmia, and the rest of severe injury to the brain. The man who recovered had been kicked in the forehead by a horse. The anterior wall of the right frontal sinus was driven in; there was no emphysema: recovery ensued in eight days.

Sixteen cases of *fracture of the base* of the skull were admitted, seven of which died. In all of these there was bleeding from one or both ears, and in many, paralysis of the seventh pair of nerves. One man, who had been knocked down by a soldier, had ptosis of both eyelids, fixed and dilated pupils, and bleeding from the right ear. He was discharged convalescent in three weeks; but returned in a month with vertigo, headache, and tinnitus aurium. After an occasional purge, with an unstimulating diet, blisters to the nape of the neck, and leeches to the temples, he left in a month quite well. Another, who had fallen from the top of an omnibus, and had bleeding from the left ear, returned in a week with similar symptoms, which a like treatment removed.

In two cases in which both branches of the seventh cranial nerve were implicated, their function was not restored during the patients' stay in the hospital.

In the fatal cases that were examined, fissures were found traversing the occipital, temporal, and sphenoïd bones, and the brain was more or less bruised and lacerated. There were twenty cases of *severe bruising* of the scalp admitted, all of which did well.

Injuries of the Face.—Under this head are entered sixty-two cases, none of which were fatal. Two were complicated with ery-

sipelas, and eleven with injury to some other part of the body. Eleven cases of *fracture of the lower jaw* were admitted. A four-tailed bandage, and occasionally a gutta-percha splint, comprised the local treatment. There were four cases of *fracture of the bones of the face.* One of these was a fracture of the upper jaw in a man who was jammed between the buffers of two railway trucks in motion. Eleven cases of *contusion* and thirty-one of *wounds* constitute the greater proportion of the injuries to the face. There were two wounds of the eyelid and six of the eyeball. Three of these were wounds of the cornea, one of the sclerotic, and in the other two the eye was injured by mortar flying into it. The wound in the sclerotic was produced by a chip flying from an iron pipe which a fellow-workman was cutting through; the wound healed readily. Of the other three cases, one occurred in a girl; a fragment of a percussion-cap penetrated the cornea and lodged in the iris. It was extracted under chloroform; an attack of iritis followed, the iris became adherent, and vision was much impaired. Subsequently the eye became useless from staphyloma, and six months after the accident the cornea was removed and the globe allowed to collapse with a view to wearing an artificial eye. Another occurred in a man who was struck in the eye by something as he was walking in the street. There was a wound of the left cornea, and a large effusion of blood into the anterior chamber. Loss of vision ensued. The third was a superficial wound of the cornea produced by a chip flying from a block of wood. The wound healed readily. One woman was admitted who had had a portion of her tongue bitten off in a drunken row.

INJURIES OF THE BACK.—Thirty-nine cases are entered under this head, of which five were *fracture* of the spine, without exception fatal. One was the case of a cab-driver, who fell from his seat when in a state of drunkenness; there was complete paraplegia; he died on the day of his admission. A labourer, on whose back a sack of wheat had fallen, died in a few hours with the same symptoms. A third case was that of a man who had fallen from a scaffold about forty feet in height. He was quite insensible when picked up, but had recovered consciousness when admitted, and evidently understood what was said to him, though he could not answer questions. The lower limbs were paralysed, but not quite devoid of sensation. Reflex action was well marked; the breathing was quite easy. On the following day he could speak a little, and complained of pain in the back of the neck, where there was extensive ecchymosis, but no displacement of the vertebræ could be felt. The breathing became diaphragmatic, he lost the power of speech, and two days later he died. (586, P.) There was a good deal of bruising over the buttocks, and considerable effusion of blood amongst the deep muscles of the back, from the cervical to about the ninth dorsal vertebra. Blood was found effused on the theca vertebralis from the fifth cervical to the fourth dorsal vertebra. The body of the sixth cervical vertebra was fractured perpendicularly, and a

sharp splinter of bone projected backwards into the spinal cord, which in this situation was extensively bruised and softened. The veins of the dura mater and vessels of the brain were gorged with blood, and there was some extravasation into, and bruising of its substance. (See P. M. Book, No. 129.) The last was the case of a boy, æt. 11, who fell from a bridge some twenty feet high. He was paraplegic when admitted, and had no control over the bladder or rectum. Reflex action was well marked. He died in thirty-one days, with ammoniacal urine, bed-sores, &c. (1653, L.) On opening the spine, a very considerable effusion of firm gelatinous lymph was found external to the dura mater, and surrounding it from the sixth to the eighth dorsal vertebra, and at this spot the cord was much softened. There was a slight angular curvature opposite the sixth dorsal vertebra, which was due to its partial displacement backwards from the seventh. The anterior inferior border of the sixth was absorbed and rounded off, and the intervertebral substance was gone from between the bones, which were covered with a smooth glistening substance resembling synovial membrane; but the structure of this membrane could not be detected under the microscope. (See P. M. Book, No. 304, and preparation in the Museum.)

Twenty-nine cases of *sprains* and *contusions* of the back occurred, with four of *wounds*. Of these one, which was fatal, occurred in an excavator who had been caught between a wall and a railway truck. The scrotum and left thigh were extensively bruised; an immense lacerated wound extended from the anus over the right buttock, as high as the last dorsal vertebra, and from it down the left side to the sacro-iliac joint. This large flap was torn from the muscles beneath, and was much bruised. The man died three hours and a half after his admission. (See P. M. Book, No. 242.) One case is entered as *concussion*. It occurred in a railway porter who was much shaken in a collision. He recovered.

INJURIES OF THE NECK.—These include three cases of suicidal *cut-throat*—two males and one female. One of the men, who was much collapsed from loss of blood, died on the day of his admission; the other two patients recovered. Two cases of *wound* of the neck—one in a man who had fallen from the roof of a house, and was spiked on the area-railings below. There was a punctured wound below the body of the lower jaw, and other injuries; he died in twenty-four hours. The other was a case of simple abrasion of the skin, in an engineer who had caught his neck in the strap of a propelling engine; he had been nearly strangled, but recovered in a couple of days. Three cases of *sprains* of the neck were admitted; they did well.

INJURIES OF THE CHEST.—Among these were nineteen cases of *fractured* ribs, two of which died of bronchitis; and thirty-two of simple *contusion* of the chest-wall, all of which recovered. Two cases are entered as *wounds;* one in a man who spiked himself in climbing

the Hyde-Park railings during the riots; the other was a stab inflicted during a street row; both recovered. In one case the right lung was supposed to be ruptured. A man was admitted having fallen seventy feet from a scaffold. He was much collapsed. There was lancinating pain during inspiration, extending from the epigastrium through to the back. There was dulness on percussion, with deficient breathing over the lower part of the right lung in front. He had cough and hæmoptysis. The hæmoptysis gradually ceased, and in a few days râles were heard over the injured lung, which were replaced by the natural vesicular murmur in about three weeks. (1528, T.)

A builder, aged 59, was brought in dead, having fallen from a scaffold some twenty feet high.

At the post-mortem examination the pericardium was found to be thickened and full of clotted blood; and its inner surface was coated with rough lymph. The heart was greatly hypertrophied; the ascending aorta was dilated, and its coats were thickly infiltrated with atheromatous deposit. This deposit extended into the thoracic aorta, where it had split up, leaving plates of calcareous matter projecting into the vessel. Quite at the back part of the arch, just above the valves, the atheroma had given way, and a small rent extended through the posterior aspect of the vessel, through which the blood had been extravasated into the pericardium. (See P. M. Book, No. 86.)

INJURIES OF THE ABDOMEN.—Among these were ten *contusions* of the abdominal parieties. Several cases occurred in children who were run over in the street; others occurred to men who were kicked by horses. One man fell from a scaffold, another across a girder. One girl was admitted with a contusion from a fall down stairs. In several cases there was collapse; but the urine was found perfectly normal, and no case was fatal.

There were four cases of *injury to the scrotum*, of which three were bruises, and one a lacerated wound in a man who had been run over by a cab. The wound was stitched together, and healed readily. In one case the penis was severely bruised by a kick. There were two cases of *wounds of the labium;* one in a woman who fell across the back of a chair, and in the other a chamber gave way beneath the weight of the body, and one of the fragments inflicted a deep wound in the right labium. Both cases did well.

There were six cases of *wounds* of the abdomen; two of these were stabs inflicted during street rows. In both the wounds were of a dangerous character, and a considerable amount of blood was lost; both cases, however, recovered. One man wounded himself by falling down whilst carrying a knife; another was accidentally wounded with small-shot. These were found in numbers embedded in the skin. There were thirty-nine shot-marks; but none of the wounds were deep, some of them being mere abrasions. The patient did well. (1230, H.) One man was admitted who, three years previously, had

been gored by a bull. There was a punctured wound in the right hypochondrium, with hardened edges, and secreting offensive pus; but no trace of fæcal matter could be found. The sinus did not heal, and he was made an out-patient.

One case of *rupture of the liver* is recorded. The patient also had a compound fracture of the skull. He lived for three days. (See P. M. Book, No. 259.)

Two cases of *ruptured kidney* were admitted. One was that of a man who fell from a scaffold some forty feet high. There was abundance of blood in the urine. He left the hospital contrary to the wish of the surgeon. The other was the case of a man who was jammed against a wall by the pole of a pleasure van. There was a bruise on the left side of the epigastrium. He was in a state of extreme collapse; on rallying he had vomiting. Blood was found in the urine for some days. Morphia was subcutaneously injected, and subsequently opium was given by the mouth. The most troublesome symptom was the vomiting; this, however, subsided, and he made a good recovery. (878, H.)

One case of *ruptured urethra* was admitted. A catheter was introduced into the bladder through an incision in the perinæum; and afterwards catheters were passed per urethram, and the wound healed.

One case of *fracture of the pelvis* was admitted. It occurred in a man who was riding down an incline on a truck, when he was struck by a piece of timber which projected across the line. One of his ribs was fractured, and there was emphysema. Over the crest of the left ilium was a severe bruise and a small wound. Crepitus could be detected. Evidently a portion of the iliac crest was chipped off. The patient recovered. (2087, P.)

Injuries of the Upper Extremity.—Of these there were one hundred and two cases admitted; fifteen of which were *contusions*, six being complicated with other injuries. There were twenty-eight cases of *wounds;* of which two were above the shoulder, seven of the arm, five of the forearm, and fifteen of the hand.

Of the two wounds of the shoulder, one occurred in a man who fell from the roof of a house and was spiked on the area-railings below. There was a punctured wound in the centre of the right axilla; the other extremity of the wound was just behind the tip of the acromion, being the point of exit of the spike; there was also a similar wound in the throat, below the jaw. He complained of pain in the head, and gradually became insensible, and died in about twenty-four hours. The brain was found intensely congested, as were also the abdominal viscera to a greater or less extent. (See P. M. Book, No. 290.) The other was a wound inflicted by a blow with a shovel; the case did well.

Of the wounds of the arm, four were inflicted by broken glass. In one, which was caused by the bursting of a lemonade-bottle, there was a small punctured wound in front of the inner condyle of the left

humerus, and close to it a pulsating swelling. On flexing the arm, blood spurted from the wound, but the hæmorrhage ceased on extending the limb. The case did well for ten days, when severe hæmorrhage came on; it was found to proceed from a wounded branch of the brachial artery: the vessel lay superficially; it was divided and both ends were ligatured; the wound healed in ten days. (1051, H.)

In one case, among other injuries, the left arm was lacerated by a reaping-machine. The other two were railway accidents; in both cases a train passing over the unfortunate men. In one an arm was severely lacerated, and there was a compound fracture of the thigh, with other injuries, from which death took place in a couple of hours. In the other instance the patient was admitted blanched and moribund; there was a deep wound in front of the left elbow completely severing the brachial artery; the vessel was immediately secured, but death occurred in an hour. On examination after death all the organs were found healthy; they were not much blanched, and would not have been noted as wanting in blood. (See P. M. Book, No. 13.) The wounds of the forearm do not all call for special remark. In one case the ulnar artery was divided, and required ligature; in another, a wound of the front of the forearm became sloughy, and hæmorrhage took place from the radial artery; the vessel was secured, the wound soon after became healthy and cicatrised. There were fifteen wounds of the hand, two of which were attacked by phagedæna.

Twenty-four cases of *fracture* of the upper extremity were admitted; ten being of the clavicle, one complicated with a scalp wound, two with bronchitis.

There were six of the humerus, and eight of the bones of the forearm. One of these, in a woman æt. 49, proved fatal; the olecranon was fractured; abscesses soon followed in the elbow-joint, necessitating amputation, and death occurred five days later from pyæmia. (479, T.)

Of *compound fractures* seventeen were admitted. Two were of the arm, and three of the forearm, and they will be found in the Table of Compound Fractures; the remaining twelve cases were fractures of some part of the hand, and were admitted in order that the injured part might be removed. In two cases diffuse inflammation of the forearm followed, in two pyæmia and death, and in one tetanus, which proved fatal in twelve days.

There were five *dislocations* of the shoulder; of these, four were into the axilla, three being recent injuries, in which reduction was easily effected; the fourth being the case of a woman, æt. 51, who had fallen down stairs and dislocated her shoulder eleven weeks previously. After some difficulty the head of the bone was restored to its normal position by means of the heel in the axilla. (1643, P.) The fifth was a case of subcoracoïd dislocation in a man who had fallen out of bed four months previously, the luxation never having been reduced. The deltoïd appeared flattened and somewhat wasted, and there was pain in the course of the circumflex nerve. After the employment of

considerable force the dislocation was reduced (1941, P.); the patient, however, came up to the hospital some two months afterwards with the shoulder again displaced. The head of the bone was readily restored to the glenoïd cavity. One case is entered as a dislocated finger. It occurred in a boy who, being thrown out of a cart, fractured his forearm, and, besides sundry cuts and bruises, sustained a dislocation backwards of the first phalanx of the little finger; it was easily reduced.

Eleven *sprains* of the upper extremity are entered, viz. six of the shoulder, one of the elbow, and four of the wrist. One case of *gun-shot wound* of the hand completes the list of injuries to the upper extremity; it occurred to a man in whose hand a gun exploded. The fingers of the left hand were severely lacerated, and the ring-finger required amputation; he speedily recovered with a useful hand.

INJURIES OF THE LOWER EXTREMITY.—These comprise a list of four hundred and seventy-five cases. Of this number, one hundred and four are entered as *contusions*—five of which were complicated with other injuries. There were two deaths. A woman, æt. 53, was admitted with great swelling and bruising of the right thigh, the result of an injury caused by the wheels of a cart passing over the limb. The whole leg was much swollen, and colder than the other. It was thought that pulsation could be felt in the posterior tibial artery; and as the woman was in a very low state, amputation was not thought advisable. She gradually sank, and died on the fourth day after her admission. (784, H.)

The body was enormously fat. On cutting through the bruised skin of the thigh, the cellular tissue was found separated from the planes of muscles to an enormous extent, forming a large cavity, filled with serum and clotted blood. The femoral artery was carefully examined, but was found to be uninjured: the bone was not fractured. No other parts were examined. (See P. M. Book, No. 162.)

The popliteal artery was, in one instance, ruptured. The patient, a navvy, æt. 25, stated that five weeks previously he had been struck on the leg by a crowbar, causing him great pain. He continued his work; but a swelling appeared in the leg in a few days, and rapidly increased. At the end of a fortnight he had to lay up, and the swelling remained stationary; but on the night before his admission, a little blood was discharged through an opening in the ham.

He was in a state of extreme prostration,—being delirious, and covered with a cold sweat. The left leg was enormously swollen, the skin being quite cold, tense, and white: on the heel were some bullæ, filled with dark-coloured serum. The tibial arteries could not be felt to pulsate; in the popliteal space was a small spot of ulceration, through which a little blood was oozing. The femoral artery was pulsating forcibly. Amputation of the thigh was immediately performed by the double-flap method. Although in an almost moribund condition, he rallied for some time; but he was soon seized with profuse sweating, and died exhausted on the twentieth day. After

amputation the popliteal artery, opposite the knee-joint, was found ruptured, though not completely torn across; the vein was thickened, and it contained an adherent clot. (178, L.)

At the post-mortem examination, the stump was found full of pus; pus was also found within the femoral vein, with ragged lymph adherent to its inner surface; its walls were thickened, and adherent to the surrounding tissues. Pyæmic abscesses were found in the liver and left lung, with purulent effusion into the pleura. (See P. M. Book, No. 57.)

There were forty-four *wounds* admitted: viz. thirteen of the thigh, twenty-two of the leg, and nine of the foot; seven were complicated with other injuries, of which the most serious were a fractured forearm and a fractured thigh. Seven cases were attacked with hospital gangrene, and one died of pyæmia. A child, æt. 18 months, who was run over by a van and had an extensive lacerated wound of the thigh, died somewhat suddenly of bronchitis.

One hundred and fifty *fractures* of the bones of the lower extremity occurred. Of these, forty-seven were of the shaft of the femur, and three of the neck. The tibia alone was fractured in three instances, the fibula alone in fourteen, and the patella in six; both bones of the leg were fractured in seventy cases, and the bones of the foot in two. One case of comminuted fracture of the lower end of the femur into the knee-joint proved fatal in four days, from delirium tremens. Blood was found extravasated between the fragments of bone; but there was no effusion, or effort at repair. (See P. M. Book, No. 303.)

One patient was admitted with a simple fracture of one leg and both thighs. He was found lying on the railway, and died of collapse a few hours after his admission.

One case of fractured cervix, in a woman aged 80, proved fatal from exhaustion and bed-sores. In no other cases of simple fracture of the bones of the lower extremity was there a fatal issue.

A man who had fallen some distance, and alighted on his feet, had both ankles severely sprained and a portion of the outer part of the left os calcis chipped off. (1945, P.)

It is unnecessary to recapitulate the treatment pursued in the various fractures, as it will be found *in extenso* in last year's Report.

During the past year, twenty-five cases of *compound fracture* of the lower limbs were admitted. Of these, five were of the thigh: three died—two from collapse, and one from contusion of the brain. Twenty-one were of the leg, of which eight died: one of collapse, in which there were other injuries; two of pyæmia, following suppuration, and one of pyæmia after amputation; one after primary amputation; two of phagedæna (in one amputation of the leg was performed); one of exhaustion, after amputation for gangrene.

In all, thirty cases of compound fracture of the long bones were admitted; viz. twenty-five of the lower extremity (*vide ut supra*), and five of the upper limb, viz. three of the arm, and two of the forearm; these all recovered. In the annexed Table a short account of all these cases will be found.

*Table of Compound Fractures.*

| No. | Name, sex, and age. | Nature of accident. | Limb | State of fracture. | Treatment and result. | Remarks. |
|---|---|---|---|---|---|---|
| 1. | Charles D. M. 19. (164, P.) | Knocked down and trampled on by a horse. | Left leg. | Oblique fracture. Small wound. Great bruising and swelling. | Assellini's box. Secondary amputation. Died, 28 days. | Gangrene set in on the third day after the accident. The stump sloughed, and secondary hæmorrhage carried him off. |
| 2. | Thomas J. M. 18. (193, L.) | Was caught by machinery. | Left leg. | Epiphysis of lower end of femur separated. Soft parts immensely lacerated. | Primary amputation. Died, 12 hours. | Patient never rallied from the collapsed state he was in when admitted. |
| 3. | George F. M. 21. (361, T.) | Run over by a railway train. | Left thigh. | The limb was almost separated from the body. | Stimulant. Died, 3 hours. | He died from collapse. |
| 4. | Richard J. M. 34. (630, T.) | Fell from a boiler. | Left leg. | Both bones fractured. Two small punctured wounds. | Side-splints. Salter's swing. Stimulants and anodynes. Recovered, 40 days. | |
| 5. | Eli H. M. 38. (702, P.) | Was kicked by a horse. | Left thigh. | Oblique fracture at the junction of middle and lower thirds. Small punctured wound. | Long splint. Recovered, 44 days. | |
| 6. | Thomas W. M. 10. (880, H.) | Fell from the roof of a house. | Left leg. | Oblique fracture. Small wound on the outer side of tibia. | Assellini's box. Recovered, 49 days. | A pad of lint was placed over the wound, but slight suppuration occurred; it did not, however, materially retard recovery. |
| 7. | Evan L. M. 29. (916, P.) | Was run over by a railway engine. | Left leg. | The foot and ankle were hanging by a shred of skin. The bones were splintered. | Primary amputation. Recovered, 86 days. | Phagedæna attacked the stump twenty-two days after the amputation. Recovery was slow, and was retarded by the formation of abscesses in the stump. |

| No. | Name, sex, and age. | Nature of accident. | Limb. | State of fracture. | Treatment and result. | Remarks. |
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| 8. | Caroline A. F. 44. (1046, H.) | Slipt off the kerbstone. | Left leg. | Bones fractured at their lower third. Small wound on the inner side. | Assellini's box. Recovered, 48 days. | |
| 9. | Sarah L. F. 41. (1197, T.) | Fell from a van, and a cart-wheel passed over the arm. | Left arm. | Humerus fractured at about its centre. Small wound. | Side-splints. Recovered, 8 days. | |
| 10. | James R. J. M. 18. (1204, P.) | Fell amongst the machinery of a saw-mill. | Right leg. | The leg was severed just above the ankle, the bones being smashed and the periosteum stript off. | Primary amputation. Died, 50 days. | Phagedæna set in on the fifth day. The anterior flap was destroyed and the bone exposed. Bed-sores and exhaustion ensued. |
| 11. | Henry M. M. 34. (1240, H.) | Run over by a van. | Left leg. | Oblique fracture about two inches above the ankle. Wound small. | Assellini's box. Secondary amputation. Died, 21 days. | Phagedæna set in on the tenth day. The soft parts were extensively destroyed, and the bone left exposed. Amputation was performed on the twelfth day; nine days after, he died of pyæmia. |
| 12. | Charles S. M. 40. (1256, P.) | Was thrown from a cart. | Right fore-arm. | Bones fractured at about their centre. Wounds small, and on the inner side. | Side-splints. Recovered, 8 days. | |
| 13. | George P. M. 50. (1300, L.) | A railway wagon passed over the arm. | Right arm. | The humerus was comminuted above the elbow; the olecranon and outer condyle were also fractured. Wound small. | Side-splints. Recovered, 85 days. | Phagedæna attacked the wound on the fifteenth day. The skin at the back of the arm sloughed, and the triceps muscle was laid bare. He ultimately made a good recovery. |
| 14. | James M. | Fell from a | Left arm. | Comminuted fracture of | Side-splints. | Patient was delirious for the first |

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| | M. 25. (1413, H.) | bridge twenty feet high. | | upper third of humerus. Small wound on the outer side. | Pasteboards. Recovered, 47 days. | few days, and there was great swelling of the parts. He ultimately did well. |
| 15. | Thomas H. M. 34. (1417, H.) | Stept from the footboard of a 'bus in motion, and fell down. | Right leg. | Oblique fracture of lower third of leg. | Assellini's box. Recovered, 48 days. | An attack of phagedæna retarded recovery. |
| 16. | Michael S. M. 29. (1504, L.) | Fell from a scaffold through a glass window. | Right forearm. | Radius fractured about three inches above the wrist. An angular cut across the back of the forearm. | Pistol-shaped splint. Silver sutures. Recovered, 64 days. | Phagedæna set in on the eighteenth day. The cephalic vein inflamed, and was obliterated by subcutaneous section. He made a good recovery, and soon after his discharge could lift a half-cwt. with the injured limb. |
| 17. | Edward W. M. 27. (1542, T.) | Was thrown by a horse, and kicked. | Left leg. | Oblique fracture a little below the centre of the limb. Wound an inch long. | Assellini's box. Side-splint. Recovered, 91 days. | Recovery was retarded, first by suppuration, and then by phagedæna. |
| 18. | Mary B. F. 48. (1565, H.) | Was knocked down by a man. | Right leg. | Oblique fracture two inches above the ankle. Small punctured wound. | Assellini's box. Pasteboard splints. Recovered, 77 days. | |
| 19. | William B. M. 38. (1616, P.) | Fell from the roof of a railway station. | Left leg. | Oblique fracture, bones protruding through a wound two inches long. | Assellini's box. Secondary amputation. Died, 41 days. | On the fourth day the wound became unhealthy. Secondary hæmorrhage occurred on the thirteenth day, and again on the twenty-third day, when amputation was performed. He died of pyæmia nineteen days subsequently. |

| No. | Name, sex, and age. | Nature of accident. | Limb. | State of fracture. | Treatment and result. | Remarks. |
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| 20. | James D. M. 17. (1641, L.) | Was jammed between a cart-wheel and a piece of wood. | Left leg. | Transverse fracture of lower third of limb. Skin firmly tucked in between the fragments of the tibia. Wound small. | Assellini's box. Division of the tendo-Achillis. Died, 25 days. | The bones could not be got into apposition until the tendo Achillis was divided. There was a great deal of swelling of the limb. Pyæmia set in on the twentieth day. |
| 21. | Thomas W. M. 47. (1645, L.) | Was kicked by a horse. | Left leg. | Oblique fracture of lower third of limb. Small punctured wound. | Assellini's box. Pasteboard splints. Recovered, 61 days. | |
| 22. | Samuel M. M. —. (1418, H.) | Run over by a railway train. | Left leg and right thigh. | Leg crushed. Fragments of femur protruding through an extensive lacerated wound. | Stimulants. Died, 2 hours. | The right arm was lacerated. Patient was moribund when admitted. |
| 23. | Eliza N. F. 57. (1555, H.) | Fell down a flight of steps. | Left leg. | Oblique fracture of lower third of limb. Small wound. | Assellini's box. Recovered, 42 days. | |
| 24. | Rebecca C. F. 52. (1816, L.) | Fell a height of twenty feet. | Left thigh. | Oblique fracture through centre of femur. | Long interrupted splint. Recovered, 112 days. | |
| 25. | Isaac D. M. 30. (1904, H.) | Was jammed between some pieces of timber. | Left leg. | Transverse fracture of tibia at middle third; fibula fractured two inches lower down. Small wound. | Assellini's box. Side-splints—pasteboards. Recovered, 29 days. | |
| 26. | Elizabeth C. F. 59. (1944, P.) | Fell down stairs. | Left leg. | Bones fractured at lower fourth. Small wound. | Assellini's box. Pasteboards. Recovered, 40 days. | |

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| 27. | John O.<br>M. 22.<br>(2012, T.) | Kicked by a horse. | Left leg. | Both bones fractured obliquely at centre. Wound half an inch long in front of leg. | Assellini's box. Recovered, 66 days. | Suppuration occurred, with necrosis, and some pieces of bone were removed. |
| 28. | Thomas B.<br>M. 53.<br>(2013, T.) | Fell from the third story of a house. | Right thigh. | Oblique fracture through centre of bone. Small wound. | Stimulants. Died, 2 hours. | There was also a simple fracture of the left thigh, a bruise on the vertex. Coma, epistaxis, and stertorous breathing. The brain was found bruised, with extravasated blood in the ventricles and in its substance. |
| 29. | John T.<br>M. 38.<br>(2067, H.) | Was thrown out of a van. | Right leg. | Oblique fracture of both bones. Small wound. Great bruising and swelling. | Side-splints, inclined plane. Died, 25 days. | Suppuration set in, and on the seventeenth day he had a rigor, and died of pyæmia in 8 days. |
| 30. | John H.<br>M. 12.<br>(2098, P.) | Was knocked down by a railway truck. | Right leg. | Oblique fracture of lower third. Long lacerated wound. | Assellini's box. Silver sutures. Recovered, 78 days. | Suppuration occurred, and the end of the lower fragment of the tibia became exposed. The bone exfoliated, and the wound healed. |

There was one case of *dislocation* of the knee outwards, and one of dislocation of the semilunar cartilages. The first was caused by a heavy packing-case falling on a man's back, which knocked him down and doubled his leg under him. The left tibia was dislocated outwards upon the femur. Extension and traction outwards of the femur reduced the luxation. (1975, L.)

The second occurred to a man when he was stepping into a carriage. He felt great pain in the knee, and was unable to put his foot to the ground. When admitted the right knee was flexed and very painful. Under chloroform the joint was straightened and a splint applied. In a week this was removed. Slight effusion remained in the joint for some days, and when this subsided he was discharged wearing a knee-cap. (868, H.)

One patient was admitted with dislocation of the astragalus from all its attachments. The injury was produced by a fall down some steps, the foot becoming fixed between two loose bricks, and the whole weight of the body being thus thrown on the ankle. When admitted, the skin over the dislocated bone was exceedingly tense, and appeared to be in great danger of giving way. Reduction could not be effected until the tendo Achillis, the peronei, and tibial tendons had been subcutaneously divided. Even then, the skin, having been subjected to so much injury, was unable to recover itself, and subsequently sloughed. The patient got into a low hectic state with rigors and profuse sweating, and the sloughing rapidly spread, until eventually the posterior tibial artery was ulcerated into, and a violent gush of secondary hæmorrhage supervened. Under these circumstances amputation was resorted to. The patient made a speedy recovery.

Of *sprains* one hundred and fifty-four were admitted, viz. fifteen of the hip, thirty-four of the knee, and one hundred and four of the ankle. Of the hip one case proved fatal in a woman, æt. 69, who had fallen downstairs. The left hip was severely bruised and sprained, but there was no evidence of fracture. In six weeks she became low and weak, and the feet became discoloured and cold; gangrene evidently having set in. She died two days later. (6, P.)

One case of sprained knee died of bronchitis.

There was one case of gun-shot wound of the thigh, which occurred through the accidental explosion of a gun. On the outer side of the right thigh was an extensive lacerated wound, the soft parts being blackened and pulpy. Considerable swelling of the limb followed, with burrowing abscesses; these were freely opened, and some shot and fragments of charred clothing were removed. The wound became foul and sloughy, and on the seventeenth day pyæmia set in, of which he died in two days. (854, H.)

Having now passed in review the various injuries for which patients have been admitted, the inquiry naturally suggests itself, what are the causes of those accidents? In a large proportion of cases it was found that carelessness on the part of the patients, or negligence on the part of those who should have seen after them, produced the misfortune.

A number of children, allowed to run loose in the streets, got run over; or, when left in a room where there was a fire, ignited their clothing. Not a few of the fatal scaffold-accidents took place from the foolhardiness of the workmen, who preferred traversing a shorter though more dangerous part of the scaffold to adhering to the footways made for them. Drunkenness, and consequent street rows, contributed in no small extent to fill the accident-wards. And many sprains and fractures were due to falls in the street, either from slipping off the kerbstone, or falling on the pavement, rendered slippery by frost or some other cause, *e. g.* bits of orange-peel, cabbage-stalks, &c.

One young woman was burnt to death through wearing a large crinoline. Her dress became ignited while she was stooping with her back towards a fire.

We pass on now to the consideration of the second section, consisting of diseases. These (as already stated) are subdivided into general diseases, which include erysipelas, sloughing, gangrene, tetanus, and pyæmia, and diseases of special organs, viz. 1. of the organs of motion; 2. of circulation; 3. of respiration; 4. of innervation; 5. of digestion; 6. of the skin; 7. of the eye, nose, and ear; 8. of the urinary organs; 9. of the male generative organs; 10. of the female generative organs.

General Diseases.—Forty-three cases of *erysipelas* are recorded, and of these, thirty-two were cutaneous, and eleven phlegmonous. In considering these cases, it is important to know how many originated in the wards, and how many were admitted into them. This bears directly on the sanitary condition of the Hospital, and shows in the present instance how slight were the efficient causes present in it; for of the patients admitted, especially accidents with wounds, a large proportion were in a vitiated state of health, and were in every way predisposed to take any such disease. They escaped, however, with but few exceptions.

Taking the cases of cutaneous erysipelas first, we find that out of thirty-two cases, twenty-five were admitted with the disease, and seven only contracted it in the wards. Of these latter, five occurred in the accident-wards, viz. three after scalp-wounds, one after a burn of the face, and one after a bruise of the leg; the other two occurred in the wards for diseases, a stump being affected in one instance, and in the other the buttocks and thigh of a man who had a syphilitic ulcer on the right leg. Thus all the cases that originated in the house were traumatic. Of those admitted, thirteen cases were traumatic and twelve idiopathic. A foot was often affected from wearing a tight boot; twice scalp-wounds were attacked; twice wounds of the face, &c. One case of idiopathic erysipelas of the scalp and face in a young woman terminated in an attack of mania. The cases of phlegmonous erysipelas were all traumatic; eight were suffering from the disease when

admitted, and three contracted it in the house. Of these, two were of the forearm after amputation of crushed fingers, and one followed an extensive scalp-wound; the case terminated fatally from pyæmia. The treatment consisted in purgation, followed by the administration of bark, or more frequently of the tincture of the muriate of iron in half-drachm doses, with good diet and stimulants, especially brandy. The application of poultices, warm Goulard lotion, and laudanum, or of a lotion composed of half an ounce of tincture of iron to a pint of water, and occasionally incisions in the phlegmonous erysipelas, comprised the local treatment.

Phagedæna has been as rife as ever in the wards, and has marred some of the most promising operations, and carried off, or reduced to an extreme state of exhaustion, patients almost well. It was very frequent in the Fitzwilliam and Oxford wards soon after the houses had been pulled down in Grosvenor-place; and it would appear not improbable that the miasmata arising from the recently-opened drains contributed in no small extent to produce the disease.

Forty-six cases occurred; of these, thirty originated in the wards, and the remaining sixteen were admitted suffering from the disease. Of the thirty cases, ten occurred in the Fitzwilliam ward and eleven in the Oxford, with three in the Grosvenor and five in the Winchester—two smaller wards opposite the Fitzwilliam and Oxford respectively; whilst on the opposite, or women's side of the house, only one case occurred, and that was in the accident-ward. The disease attacked seven wounds, nine ulcers, six compound fractures, five cases of necrosed bone, two stumps after amputation, and one case of excision of the knee. Six cases necessitated amputation, four of which died. The greater number of cases occurred in the months of January, August, September, and October, although a few occasionally took place in all the months, May excepted. Seven cases proved fatal. Of the cases that broke out in the house, the mean duration of the disease was twelve days; the maximum being thirty-six and the minimum three days. Of those admitted, the mean duration was 7·8 days; but many of these applied for relief some days after the sloughing had set in.

The treatment pursued presented but little variation. Gradually-increased doses of opium, with bark and stimulants, were found the most useful remedies. Brandy was given in almost every case, but wine was sometimes substituted. Various topical applications were made use of; *e.g.* sulphate of copper, with extract of opium: sulphite of soda, and potassio-tartrate of iron; but those found most effectual were carbolic acid, charcoal poultices, and the unguentum viride (P. H.).

One case of senile gangrene occurred in a woman aged seventy-two. A slough formed on the outer side of the right leg, which on separating left an indolent ulcer, which took nearly three months to heal. The disease originated in a slight bruise which had been received two months previously.

Pyæmia has occurred, and proved fatal in twenty-two instances.

Of these, one was admitted with the disease, and the others originated in the house. A table has been drawn up similar to that in last year's report, where may be seen the principal points in connection with the disease. The thermometer was made use of in but few instances; but in those in which it was used its readings have been entered.

## *Cases of Pyæmia.*

| Name, age, and occupation. | Ward; date of admission. | History of case. | Date of first symptoms and progress of case. | Post-mortem. | Treatment and remarks. |
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| 1. Joseph M. 28, fireman. (39 L.) | Fitzwilliam. Jan. 10th. | Thumb and two first fingers crushed by an engine-wheel; primary amputation. | Jan. 25th, first rigor, followed by profuse sweatings, and dyspnœa. Died Jan. 27th. | No post-mortem. | Stimulants. |
| 2. Thomas J. 9. (84 T.) | Oxford. Jan. 15th. | Lacerated wound of leg; injury to knee. | Phagedæna attacked the wound on the sixteenth day; when this ceased he was in a very low state. March 7th, first rigor, followed by exhaustion. | Knee-joint laid open, cartilages ulcerated. Femoral vein plugged. Secondary deposits in both lungs. (See Post-mortem Book No. 77.) | Opium, ammonia, bark, brandy. |
| 3. Henry W. 32, conductor. (146 P.) | Harris. Jan. 25th. | Stricture; retention. | Feb. 3d, friction-sound on left side of chest. 4th, first rigor, followed by profuse sweating; and cough. Died Feb. 10th. | Pus around urethra and neck of bladder. Secondary deposits in lungs and kidneys. (See Post-mortem Book No. 48.) | Pil. col. c. opio, effervescing saline, stimulants. |
| 4. George O. 51. (230 T.) | Hudson. Feb. 12th. | Gangrene of a finger after injury; amputation. | Feb. 24th, first rigor, followed by profuse sweating. Died March 4th. | No post-mortem. | Brandy, bark, and ammonia. |
| 5. Sarah H. 57, married. (236 H.) | Princess. Feb. 14th. | Abscess of elbow-joint of five months' standing. | March 24th, first rigor, followed by profuse sweating. Jaundiced skin and diarrhœa. Died March 30th. | Bones of elbow-joint carious. A secondary abscess in left lung. (See Post-mortem Book No. 96.) | Brandy, ammonia, opium. |

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| 6. Susan D. 48, married. (279 P.) | Drummond. Feb. 21st. | Ruptured perinæum, causing prolapsus. Plastic operation. | Feb. 27th, first rigor, followed by sweating and prostration. Died March 3d. | The lungs, liver, and spleen contained secondary deposits. (See Post-mortem Book No. 67.) | Opium, brandy, ammonia, effervescing saline. |
| 7. William F. 28. (365 T.) | Oxford. March 13th. | Fell from scaffold. Depressed fracture of skull, without symptoms. | April 4th, first rigor, followed by profuse sweating. Died April 10th. | Inner table of skull uninjured; pus in diploe, and between the bone and dura mater. No other parts were examined. (See Post-mortem Book No. 109.) | Stimulants. |
| 8. Henry B. 40, carman. (809 Ho.) | Grosvenor. June 5th. | Amputation of leg three years previously for primary injury. | June 24th, first rigor, followed by sweating, and secondary hæmorrhage. The rigors recurred, and he had epistaxis. Died June 30th. | No post-mortem. | Stimulants. |
| 9. William W. 18, bricklayer. (854 H.) | Oxford. June 9th. | A gun exploded whilst he was drawing it through a hedge. Large lacerated wound of thigh. | June 26th, first rigor, followed by sweats, convulsions, and delirium. Died June 28th. | No post-mortem. | Brandy, wine, chlorate of potash, bark. |
| 10. William F. 42, shoemaker. (913 P.) | Fitzwilliam. June 16th. | Cut his finger with a knife, thecal abscesses followed. | July 1st, first rigor, followed by profuse sweating, repeated shiverings, and jaundiced conjunctivæ, with purulent expectoration. Died July 10th. | No post-mortem. | Stimulants, bark, ammonia. |

| Name, age, and occupation. | Ward; date of admission. | History of case. | Date of first symptoms and progress of case. | Post-mortem. | Treatment and remarks. |
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| 11. Mary L. 30, married. (1392 Med.) 1392* P. | Princess. Oct. 31st. Transferred Nov. 14. | Has had eight children. Last confinement June 22d, followed by rigors and abscesses. | Rigors six weeks before admission. When transferred had bed sores, purulent discharge from vagina, with abscess in thigh. Died Dec. 20th. | No post-mortem. | Abscess opened. Brandy, beef-tea. |
| 12. Uria C. 57. (1452 P.) | Fitzwilliam. Sept. 7th. | Hand crushed three days previously by pole of omnibus. Abscess followed. | Sept. 11th complained of pain in ankles, and left shoulder, where there was swelling. Died Sept. 14th. | Lower part of right lung rotten and congested; spleen pulpy. The left shoulder and knee-joints contained pus. (See Post-mortem Book No. 268.) | Abscess opened; puncture made in shoulder. Brandy, ammonia. |
| 13. Eliza A. C. 53, married. 1473 L.) | Princess. Sept. 12th. | Abscess of knee-joint of uncertain date. Amputation of thigh Oct. 11th. | Oct. 12th, first rigor, followed by profuse sweating, and repeated shivering-fits. Died Oct. 23d. | Secondary deposits in left lung and right pleura. Stump sloughing. Clot in femoral artery almost destroyed by suppuration. Osteo-myelitis of femur. The inferior vena cava contained a broken-down blood-clot. (See Post-mortem Book No. 292. See prep. Ser. ii. 29*a*, and drawing, Ser. xxii. 55*a*.) | Egg and brandy, wine, bark. |

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| 14. Charles A. 37, surveyor. (1485, Mid. 1485* L.) | Fitzwilliam. Sept. 14th. Transferred Sept. 15th. | Abscess of elbow-joint of long standing. | Oct. 3d, first rigor, followed by sweating and exhaustion. Died Oct. 4th. | Both lungs congested posteriorly. Spots of intense congestion in liver. Abscesses in kidneys. An immense abscess in right thigh, with clots in femoral and iliac veins (see Post-mortem Book, No. 277). | Brandy, bark. |
| 15. William B. 38, fitter. (1616 P.) | Oxford. Fitzwilliam. Oct. 8th. | Compound fracture of leg. Secondary hæmorrhage. Amputation of leg. | Nov. 1st, first rigor, followed by profuse sweating and vomiting. Maximum temperature 103·2. Respiration per minute 28. Pulse 136. Died Nov. 18th. | Stump sloughing. Pus in femoral and profunda veins. Tongue swollen, and œdematous on the left side. Abscess in left lung (see Post-mortem Book, No. 312). | Brandy, ammonia, quinine. |
| 16. James D. 17, navvy. (1641 L.) | Oxford. Oct. 11th. | Compound fracture of leg. Unhealthy suppuration. | Nov. 1st, first rigor, followed by profuse sweating and rigors. Maximum temperature 104. Respiration 58. Pulse 164. Died Nov. 4th. | No post-mortem. | Brandy, ammonia. |
| 17. William L. 67, gardener. (1820 L.) | Oxford. Nov. 12th. | Was thrown in the street. Scalp wound exposing the bone. | Nov. 25th, first rigor, followed by sweating and exhaustion. Died Dec. 1st. | Wound sloughy. Bone near wound infiltrated with pus; pus between bone and dura mater, and in cavity of arachnoid. Deposits in both lungs (see Post-mortem Book, No. 324). | An attack of diffuse inflammation of the scalp preceded the pyæmia. Stimulants. |

| Name, age, and occupation. | Ward; date of admission. | History of case. | Date of first symptoms and progress of case. | Post-mortem. | Treatment and remarks. |
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| 18. Philip P. 19, groom. (1833 T.) | Fitzwilliam. Nov. 14th. | Swelling on right of sternum for some months. | Nov. 21st, first rigor, followed by repeated attacks and sweating, with dyspnœa. Maximum temperature 103·2; respiration 28; pulse 112. Died Dec. 23d. | First ribs at their junction with the sternum were carious, as were also the extremities of the clavicles and upper part of sternum. Lymph over left pleura, and abscess in right lung. Bodies of first and second lumbar vertebræ carious; large psoas abscess (see Post-mortem Book, No. 352). | Bark, wine, brandy. Abscess opened. |
| 19. William J. 16, cow-boy. (1897 H.) | Winchester. Nov. 25th. | Periostitis from a blow received six weeks previously. | Dec. 3d, right shoulder painful and swollen; no rigor. Died Dec. 6th. | Right tibia denuded of periosteum. Patches of intense congestion in both lungs. Abscesses in left kidney. Pus in right knee, left shoulder, and elbow-joints (see Post-mortem Book, No. 327). | Effervescing saline, brandy, morphia. |
| 20. Thomas S. 25, engineer. (1903 H.) | Hudson. Nov. 27th. | Had been an out-patient with crushed finger; which was amputated. | Had rigors on both days before his admission; and several subsequently, with sweating, cough, and purulent expectoration. The skin became jaundiced. Died Dec. 1st. | Body jaundiced, and covered with purpuric spots. Purulent fluid in left pleura. Pyæmic deposits in both lungs. Spleen diffluent. The veins of the arm contained black fluid blood (see Post-mortem Book, No. 325). | Bark, brandy, ammonia. |

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| 21. William B. 14, errand-boy. (1918 P.) | Ratcliffe. Nov. 28th. | Lupus non exedens for two years and a half. | Dec. 27, severe pain, with swelling of right knee, followed by swelling of left knee and ankle. On Jan. 11th, great anxiety and precordial pain with friction-sound. Died Jan. 12th, 1867. | Secondary deposits in right lung. Fluid in pericardium, and surface of heart covered with a layer of recent lymph. Secondary abscess in spleen. A large abscess in recto-vesical fascia (see Post-mortem Book, No. 11, 1867). | Stimulants. |
| 22. Baldwin P. 14, errand-boy. (2018 L.) | Fitzwilliam. Dec. 15th. | Abscess of thigh of nearly four months' standing. | Dec. 30, cold night-sweats, hiccough, exhaustion. Died Jan. 1st, 1867. | Pyæmic deposits in lungs. Amyloid deposit in the liver and kidneys. Caries of the spine, and pus in the psoas muscle (see Post-mortem Book, No. 3, 1867). | Stimulants. |

Two cases of tetanus occurred; one after a burn, and one after a smashed hand. In the first, extract of wooralli, the twelfth of a grain, was subcutaneously injected, but the case soon proved fatal. (457, L.) In the second, sulphate of atropine was made use of, and death did not occur until the twelfth day. M. B., aged 28, a labourer (1699, T.), was admitted with a smashed hand; the index-finger and part of its metacarpal bone were removed. He was placed upon ordinary diet, with beef-tea and a pint of porter. For the first few days he did well. On the evening of the 30th Oct., eight days after his admission, he complained of feeling his jaws stiff, and shortly afterwards had a slight rigor. Next day his jaws were still more rigid, and in the afternoon they were firmly locked; at the same time he suffered from opisthotonos, and complained of pain in the epigastrium, extending through to the back; his face was congested, deglutition difficult and attended with spasm. Atropine $\frac{1}{75}$th of a grain was injected subcutaneously at 4 P.M., and again at midnight. After the first injection, his pulse was 144, and the spasm was partially relieved, but he complained of thirst and the locked state of his jaws; there was slight risus sardonicus, and his wounds looked dusky. Ordered brandy six ounces daily.

*November 1st.* He was very restless during the night, and once persisted in getting out of bed to make water, when, owing to the opisthotonos, great difficulty was experienced in getting him back again. The trismus continues the same, but the risus has passed off, the face being less congested. Pupils somewhat dilated; bowels confined. Pulse 120, and weak; temperature in axilla 100·4 Fahr. At 11 A.M. and again at 3 P.M. $\frac{1}{75}$th of a grain of atropine was subcutaneously injected; and he was ordered half a pint of beef-tea, with brandy, to be injected per rectum, every three hours.

*2d.* He is in much the same state, but the risus has returned, and he complains of pain in the back of the neck, where the muscles are very rigid. Pupils dilated. At 11 A.M. $\frac{1}{75}$th of a grain of atropine was injected. Pulse 106, stronger; temperature 100·1; respirations per minute 28.

*3d.* Was very restless during the night, and is now delirious. The opisthotonos and trismus are much less marked, and the jaws can be separated half an inch. The injections per rectum are returned almost directly after their administration. The wound is looking more healthy, and is discharging more freely. At 10.30. A.M. $\frac{1}{75}$th of a grain of atropine was injected. Pulse 112, fuller; temperature 100·5; respirations 28.

*4th.* The trismus is about the same as yesterday; when the jaws are separated, the tip of the tongue can be seen, dry and coated. He passed a quieter night, and is in less pain. The opisthotonos is much less severe; but he has occasionally starting pain in the back and right side, and now complains of pain in the hypogastrium and loins; has less delirium, but the risus is well marked. The injections are now retained for some time. At 10 P.M. $\frac{1}{75}$th of a grain of atropine was injected. Pulse 100, softer and fuller; temperature 100·4; respirations 26.

*5th.* The symptoms have undergone no change, 10.45 A.M. Atropine gr. $\frac{1}{10}$th.

*6th.* The jaws fall open between the paroxysms of trismus, which with the opisthotonos comes on in spasms. Pupils dilated, has had slight epistaxis. At 10.50 A.M. $\frac{1}{10}$th of a grain of atropine was injected. Pulse 120, thready, and sharp; temperature 102·4; respirations 30. Ice in india-rubber bags to be applied to the spine and back of the head, and the injections of atropine to be discontinued.

On the 7th and 8th he remained in the same state, but gradually got weaker; he was covered with a profuse offensive perspiration, and was very restless. Pulse 120, very weak; temperature 101·2; respirations 28.

*9th.* There is less perspiration; the lips and teeth are covered with sordes. Trismus more marked; the opisthotonos comes on in paroxysms, with pain in the epigastrium. The injections are retained for about an hour; the bowels are rather loose, the discharges being dark, liquid, and offensive—consisting, in fact, of fæcal matter mixed with the injections.

On the 10th there was no appreciable alteration, except the increasing exhaustion. Pulse 132, very feeble; temperature 102; respirations 36; but at 5 P.M. the spasms became much more violent, and again at 12 P.M. they increased in severity, greatly impeding respiration. At 3 A.M. on the 11th, it being evident that the man would not be likely to survive should another spasm supervene, laryngo-tracheotomy was performed. He appeared much easier after the operation; but a severe spasm coming on soon after, he sank asphyxiated under its influence.*

After hardening in chromic acid, sections of different portions of the spinal cord were made, and were examined under the microscope. As far as could be ascertained, the entire cord was perfectly healthy. No abnormal appearance could be discovered.

In this case there appear to be four points worthy of notice.

1st. That the atropine subcutaneously injected relieved the spasms.

2d. That the ice-bags had no effect; but of this it may be said, that the restlessness of the patient rendered it difficult, and at times impossible, to keep them in their proper position for any length of time, which might to some extent account for the negative result.

3d. That the patient died from spasm, but not of the glottis, as the entrance to the air-passages was quite patent from the introduction of the tracheotomy tube: but probably the fatal spasm was of the diaphragm, and other respiratory muscles. This, however, does not disprove the assertion of those who declare that tetanus usually proves fatal by spasm of the glottis, but only that in this instance the fatal result was not attributable to that cause. Spasm of the glottis

* During the early part of the present year, a case of tetanus recovered after the subcutaneous injection of a solution of sulphate of atropine and bimeconate of morphia combined.

would be sufficient to cause death, without any affection of the other respiratory muscles; and laryngotomy under such circumstances would obviate the danger of asphyxia from that cause, and give the patient a further chance of lasting through the violence of the disease, though the probability is that spasm of the respiratory muscles or exhaustion would ultimately induce a fatal issue.

4th. The patient survived longer than is usual, acute tetanus generally proving fatal on the third or fourth day; this man lived rather more than twelve days after the occurrence of the first symptoms.

DISEASES OF THE ORGANS OF MOTION.—This class is reduced to four subdivisions: viz. 1st, diseases of bone; 2d, of joints; 3d, of bursæ; 4th, of muscles, tendons, and their sheaths.

One hundred and thirty-six cases of diseases of the bones and periosteum were admitted.

Forty-two cases of *necrosis* occurred: five were attacked with phagedæna. In one case of necrosis of the tibia, the soft parts were extensively destroyed, and the anterior tibial artery was laid open by the sloughing; and amputation through the thigh was found necessary. The patient recovered. (238, H.) (See Amp. Statistics, No. 11.) One case of necrosis of the lower jaw was complicated with scrofulous disease of the upper cervical vertebræ, and partial hemiplegia. The boy improved under iodide of potassium and sarsaparilla. (1940, P.)

In several instances dead bone was removed by operation, or dissolved by a solution of equal parts of sulphuric acid and water. This preparation was found very efficacious.

Caries and disease of the ends of joints give thirty examples. Several of these are interesting, and call for special mention. Those in which an operation was performed will be considered first. In three cases in which the tarsus was affected, and one in which the ankle-joint was implicated, amputation of the leg was performed. In one of these the destruction of soft parts by phagedæna necessitated the course pursued. (See Amp. Statistics, Nos. 1, 4, 9, 17.) In four cases of caries of the bones of the foot, Syme's amputation through the ankle-joint was resorted to, and with good results. (See Amp. Statistics, Nos. 5, 22, 24, 27.) In one case of disease of the os calcis, the bone was removed by means of a T-shaped incision on the outer side of the foot. (363, T.)

Diseased bone and scrofulous matter were, in two cases, removed with the gouge. In one of these the dorsalis pedis artery was divided; and so thickened were the tissues around it that it was found impossible to command the vessel with a ligature: by acupressure, however, the bleeding was readily arrested. (986, L.) This patient had more bone removed at a subsequent operation, and was discharged with a useful foot. (2019, L.)

Two cases of excision were performed—one of the shoulder, and one of the wrist, after Mr. Lister's method. In the first case, the

right shoulder had become painful and swollen four months before admission, and abscesses had formed; the joint was much enlarged, and gave great pain, especially at night. On the inner side of the arm there was an open sinus. Dead bone could be felt with a probe. Excision of the head of the humerus was performed by means of a semilunar incision on the outer side of the joint: the glenoïd cavity was healthy. A good deal of fever followed the operation; but in three months recovery took place, with partial ankylosis: the wound was not quite healed when the patient was discharged. (1113, L.) The excision of the wrist was performed for strumous disease, implicating all the bones of the carpus. Mr. Lister's method of operating was the one adopted. An incision was made on either side of the wrist, through which the whole of the carpus, with the carpal extremities of the metacarpus, radius, and ulna, was removed. None of the tendons, except those attached to the bones removed, were interfered with. The wounds were adjusted with silver sutures, and the limb was placed on a splint. For a few days the tendon of the extensor secundi intermedii pollicis was exposed, but it soon became covered with healthy granulations: passive motion was commenced on the third day after the operation. The wounds healed rapidly; the patient could soon move his fingers. After his discharge, he came to the Hospital occasionally to have passive motion employed, under chloroform, to the stiffened joints. There was no flail-like union at the wrist; its movements, though limited, were firm: the fingers were rather stiff, but the patient could hold a pen and lift a pound weight with the hand. He got tired of being chloroformed, and in about a month ceased to attend the Hospital. (1514, Ho.)

One case of strumous disease of the wrist terminated fatally from phthisis. A boy, who had strumous enlargement and commencing caries of many of the short bones, had an attack of ophthalmia. He was sent to Margate.

A case of caries of the upper part of the sternum and sternal ends of both clavicles, and both the first ribs, proved fatal from pyæmia. (See Pyæmic Table, No. 16.)

Forty-two cases of *diseases of the spine* were admitted,—of which five were lateral curvature, and the remainder angular.

In twelve of the cases of angular curvature, the disease existed in some part of the dorsal region; and in nine cases in the lumbar. The dorsal and lumbar vertebræ together were implicated in three instances. In one of these there was lateral curvature as well, with a distorted chest, &c., and the patient was discharged as incurable.

Eleven cases were complicated with psoas abscess, and two with lumbar; whilst in several instances pain on percussing the spine, with or without abscess, was the only indication of the disease; there being no perceptible inequality of the vertebræ. In six cases the abscess was opened, and in one it was allowed to burst. In two instances the abscess had burst, and was discharging when the patients were admitted. One patient was discharged at his own request, and one died of phthisis and amyloïd disease. (See P. M. Book, No. 333.)

In two instances, the cervical vertebræ were affected: in one there was paraplegia (816, H), in the other partial hemiplegia (1940, P). The lower cervical and upper dorsal vertebræ were implicated in one case. A spinal apparatus was applied.

Five cases of lateral curvature were admitted. In one of these there was some loss of power in the lower extremities, with inability to straighten them from contraction of the hamstring tendons: the left hand was also somewhat contracted. The patient, a girl aged 8, was transferred to the medical ward, with symptoms of phthisis. (55, B.)

Four cases of *tumours* connected with bone were admitted. One of these was an exostosis of the femur, situated in the most usual place for these growths,—the inner side of the lower end of the femur. It caused great inconvenience in walking, and was therefore removed. There were similar growths of smaller size on the fingers and opposite femur. (571, B.) The second was a myeloïd tumour of the lower jaw. It had been growing for ten months, and had attained the size of a walnut. It was removed with bone forceps. (1118, L.) The third was a case of considerable interest, inasmuch as there was some doubt as to its nature. A girl, aged 16, was admitted with the history that four years ago she had been kicked in the left leg. A month after this, a swelling appeared at the spot where she was struck, and it increased gradually ever since. Blisters had been applied without effect. On the outer side of the left leg was a large fluctuating swelling, covered with discoloured skin; its margin was defined by a rough hard elevation, feeling like a ridge of bone. The swelling was tapped, and a small amount of purulent fluid drawn off. In about a month the abscess burst, and a large amount of foul pus escaped. A sinus was now left in the limb, which showed no disposition to heal. The patient's health remained good, and it was proposed at some future time to remove the mass, which could be felt to be attached to the fibula.* (974, T.) The fourth was the case of malignant disease referred to in last year's Report, page 388. The mass was attached to the scapula, and had been removed, the whole bone being dissected out, with the exception of the acromion process. When re-admitted, there was a large, tense, hard swelling filling up the whole of the right axilla. She complained of pain in the chest, and occasional shortness of breath. The mass continued to enlarge, and she was seized with dyspnœa several times, and died. (698, P.) An enormous mass of encephaloïd disease was found in the axilla, with deposits of a similar nature in the lungs. A large abscess was found in the right pleural cavity; the left contained air, and about a pint of clear fluid. The posterior part

* In March 1867 the tumour, with the portion of the fibula to which it was connected, was removed. The bone was hollowed out and expanded; the tumour was found to consist of a soft, semi-gelatinous mass, which, under the microscope, was seen to consist mainly of oat-shaped cells, nucleated and nucleolated.

of the deltoïd, the lower part of the trapezius, the serratus magnus, and the rhomboïdei were completely wasted, the muscular substance being replaced by a dense fibrous membrane. The acromion process was somewhat depressed, and the head of the humerus rested against it and the acromial end of the clavicle. The arch was completed in front by the coracoïd process and coraco-acromial ligament. The head of the humerus was surrounded by a dense capsule, and a perfect joint was thus formed. (See P. M. Book, No. 206. Vide Prep. Cat.)

Three cases of *rickets* came under observation; they were admitted in order that iron supports might be applied.

Ten cases of *periostitis* came under notice. Eight of these were of strumous or syphilitic origin, and, being chronic in their nature, call for no special notice. Two only were acute. In one case the left leg had become painful and swollen without assignable cause. A free incision was made and pus evacuated. The patient left at his own request when the wound had nearly healed. The other case proved fatal from pyæmia. It occurred in a boy aged 16. He stated that six weeks previously he had had a blow on the right knee, but he took no notice of it. About five weeks after, he had pain in the chest, and on the day following, cramp and pain in the right knee. When admitted, he was in a feverish state; the knee was slightly red and swollen. Warm Goulard lotion and laudanum were applied. Two days after, he had vomiting; and on the following day the knee was swollen, and acutely tender and painful. The skin over the inner and front part of the knee and upper part of the leg was of a rose tint. Tongue coated and dry; respiration hurried; expression anxious; lower chain of inguinal glands enlarged, but not painful. Next day he was delirious. The superficial veins over lower part of the thigh were well marked. He was ordered brandy and an effervescing saline, with an anodyne draught at night. The limb was enveloped in a linseed-meal poultice. This treatment was pursued for two more days, when fluctuation appeared over the tibia, and an incision was made down to the bone; pus freely escaped, and the periosteum was found separated from the tibia. Symptoms of pyæmia now set in, and six days later he died. (1897, H.) (See P. M. Book, No. 327.)

One hundred and forty-two cases of *disease of the joints* were admitted. Of these, thirty-seven were cases of *synovitis*, which were for the most part chronic, the result of previous injury, except four, which were due to gonorrhœa, and three to rheumatism. One was a case of rheumatoïd arthritis of the knee. Splints and evaporating lotions were employed if there were any signs of inflammation about the joint; after which counter-irritation was employed, either in the form of blisters or the actual cautery at a red heat. The application of a "Scott's" bandage was frequently found of service. In several cases a good deal of hysteria was combined with the joint-affection; whilst in five instances the disease was purely hysterical. Two are entered as cases of *loose cartilage*. In one the growth was removed; it was partly adherent to the patella. (328, B.)

Two are entered as cases of *ulceration of the cartilages*. One recovered with an ankylosed joint, and one with partial ankylosis. Calomel and opium was given in the form of pills, and the actual cautery was applied to the joint (1249, P.).

Seventeen cases of *abscess in joints* were admitted, affecting the shoulder, elbow, wrist, sacro-iliac, knee, and ankle-joints. In two instances the shoulder-joint was implicated. In both ankylosis resulted. In one of these the abscess was of large size, and was situated beneath the right pectoral muscles. It was opened, and a drainage-tube inserted. A great deal of fever followed, which reduced the patient to a very low state (1746, P.). The elbow-joint was implicated in three instances; in two of these death resulted from pyæmia (see Tables, Nos. 5 and 14), and in the other the state of the patient's health prevented any operative interference. In three instances the sacro-iliac synchondrosis was affected. In one of these the abscess appeared over the joint itself; in the other it extended down the back of the left thigh to the popliteal space (92, H.). In both cases the abscess was allowed to discharge itself spontaneously, and the sinuses healed. In the remaining case the abscess was situated in the groin, and did not heal. Abscess of the knee-joint occurred in seven cases; in four of these amputation of the thigh was performed, two were attacked with phagedæna, and one died of pyæmia (see Table, No. 13). In one instance excision was performed, the wound never quite healed, and the patient was readmitted, and died of albuminuria and amyloïd disease (260, P.). In one case the joint was much swollen, and the presence of pus was determined by means of a grooved needle. The patient was discharged at his own request. In the remaining instance the state of the patient's health precluded an operation.* Amputation of the leg was performed in one instance for abscess of the ankle-joint. The flap sloughed, and a cylinder of necrosed bone was subsequently removed from the tibia. The patient made a good recovery (91, L.; Amputation Statistics, No. 3).

A case of abscess of the wrist completes our list of this disease of the joints. The patient, a carpenter, aged 24, had cut his wrist with a chisel a fortnight before his admission; inflammation and abscess ensued, destroying the entire joint. Excision was performed by means of a transverse incision across the back of the wrist. The tendons were uninjured, being held aside by blunt hooks. When discharged he had some movement of the fingers (324, L.).

Nineteen cases of *ankylosed joints* were admitted. A large proportion of these were admitted on account of the unfavourable position in which the joint had become fixed. A more useful position was in numerous instances obtained by force, employed under chloroform, or by the subcutaneous division of tendons. In one case of

* In 1867 amputation of the thigh was performed, his health having improved.

ankylosis of the elbow excision was performed. The result was unfavourable; and amputation was resorted to in 1867 (722, L.).

*Disease of the hip* presented us with forty-nine examples, amongst which are to be found instances of the disease at its earliest commencement and latest stages. The treatment adopted has been well summed up in last year's Report: "The early cases are of especial interest in showing the admirable effect of rest-treatment. The plan usually adopted is to place the patient under chloroform, and carefully to adapt a well-padded long splint down the outer side of the thigh, making slight extension by means of a perinæal strap. The effect of this is almost immediately to relieve pain; and children who were admitted in a state of great febrile excitement, and suffering intense pain—so much so that they could not bear to be moved or lie in any position but that so characteristic of acute hip-joint disease — are found in the course of a day or two to be comparatively comfortable, with a cool skin and clean tongue, and suffering little or no pain. They are kept on their backs in this position till all appearance of mischief has subsided, and are then allowed to go about on crutches with a well-fitted leather splint. Another mode of applying extension was by means of a weight, attached to the foot by means of a string, which ran through a pulley at the foot of the bed." In two instances in which the disease had existed for some time (and there were extensive sinuses), death resulted from phthisis. Excision was performed in one instance. The patient, a boy, aged eight, had injured his hip eight months previously by a fall. When admitted, the head of the bone was dislocated upon the dorsum of the ilium; and there was considerable distortion of the limb. A large abscess surrounded the joint. The abscess was opened, and a week afterwards excision of the hip was performed by means of a longitudinal incision. He was able to walk with crutches in about four months (16, L.).

Forty-nine cases of *disease of the bursæ* were admitted, and of these forty-three were of the bursa patellæ. In many of these suppuration had occurred, and an incision, with poultices, was required. In more numerous instances, however, rest and cold lotions averted the danger of the formation of pus. Chronic cases were treated by the application of blisters, or the tincture of iodine. In one case the bursa had solidified, and was removed.

Four cases of inflammation of the bursa over the olecranon were admitted. In one of them suppuration had occurred. One case is entered as an enlarged bursa in the ham. The swelling subsided under the influence of rest and a cold lotion.

The cases of *thecal abscess* were mostly confined to the flexors of the fingers or thumb. Early and free incisions, with the removal of any useless parts, constituted the local treatment.

Three deaths occurred from pyæmia, whilst several were complicated with diffuse inflammation of the forearm, or inflamed absorbents.

Nineteen cases of *contracted tendons* occurred. These were for the

most part treated by the subcutaneous division of the affected tendons, and the subsequent straightening of the foot by means of a Scarpa's shoe. One of these was acquired, and not, as most of them were, congenital talipes. It occurred in a young woman, aged 20. The right foot had been assuming a state of varus for about two years and a half. The ordinary treatment was pursued, and the foot restored to its normal position (1987, B.; see a cast, Path. Mus.).

Three cases are entered as *abscess in muscles*. One of these consisted of broken-down syphilitic deposits.

Two cases of *ganglion* were admitted. They occurred in the popliteal space, and were treated by repeated blisterings and the occasional withdrawal of their contents by a fine trocar and canula. One patient was admitted with six toes on each foot. He found them an inconvenience in walking, and had one from each foot removed (1713, H.). One case of an *hydatid cyst* in the abdominal wall occurred in a boy. He had been an out-patient for about two months, with a fluctuating tumour in the abdomen. For a fortnight before his admission this rapidly increased in size, but gave no pain. It was punctured with a grooved needle, when a watery fluid escaped, containing a trace of albumen, but no parasites. The swelling was about the size of a walnut, and situated on the right of the linea semilunaris and considerably below the edge of the liver, which occupied its normal position. The tumour was twice punctured: the fluid which escaped was of a watery nature, containing but little albumen. No hooklets could be found under the microscope. He was discharged with the swelling much reduced.*

Diseases of the Organs of Circulation.—These include diseases of the heart, arteries, veins, and absorbents. One case of *disease of the heart* is noted. The patient, a man aged 40, was admitted, complaining of intense pain down the arm as far as the elbow: he had suffered from this pain for some time, and it had come on without any assignable cause. It was somewhat paroxysmal in character, and was also intermittent, acquiring its greatest intensity at about three o'clock every afternoon. Quinine was ordered. The pain continued unrelieved; and, as there was no morbid appearance in the arm, he was transferred to the physician. Two days afterwards, he was seized with strong convulsions and died (730, L.). The heart was uncontracted, flabby, and empty: on its anterior surface was a small mass of firmly-adherent lymph. There were large vegetations on the aortic valves; the mitral valve was blood-stained, and studded with slight fibrinous deposits. The orifices of the coronary arteries were healthy. There was tubercle in the lungs, and the bronchi were full of purulent fluid. Tubercular matter was also found in the kidneys, ureters, bladder, and prostate (see P. M. Book, No. 166).

Two cases of *aneurysm* were admitted. One of these was trau-

* He was re-admitted in January 1867 with suppuration at the seat of the swelling; a hydatid cyst was discharged, and the abscess quickly healed.

matic. The patient stated that a week previously he had been cutting some broom on a common, when his knife slipped and wounded him in the leg. Smart hæmorrhage ensued, which was arrested by a tight bandage, and the wound nearly healed. On exerting himself, the bleeding recurred. When admitted, there was a punctured wound over the inner head of the gastrocnemius muscle, on a level with the inner tuberosity of the tibia. Just below the wound was a pulsating swelling, about the size of a pigeon's egg. The swelling continued enlarging, and was evidently connected with one of the muscular branches of the popliteal artery. A needle was passed beneath the vessel leading to the tumour, and pressure made by means of an elastic band attached to either extremity of the needle, passing over a cork which was placed between the needle and band. The pulsation in the aneurysm immediately ceased. Beyond slight pain, no inconvenience followed this operation; the cut, and the punctures made by the needle readily healed, and in about three weeks the patient was discharged well; the tumour was less than a third its original size, and was being rapidly absorbed (1493, L.). The other case was transferred from the medical wards, having been supposed to be a case of caries of the spine, which it closely simulated. The man was aged 30, and was admitted with the history that, four years previously, he had fallen a height of fifteen feet. He suffered very little from it till twelve months before admission, when he began to suffer pain in his back. Latterly this had been accompanied by shooting pains in the legs, with twitching of the muscles and cramp. When admitted, there was tenderness on percussion over the last lumbar vertebra and upper part of the sacrum. In the left inguinal region there was a hard swelling, simulating a psoas abscess. After rest in bed for a month the swelling diminished slightly, but the pain became more intense. He was suddenly seized one day with extreme faintness, and died. At the post-mortem examination there was found to be a large quantity of blood in the peritoneal cavity. In the left lumbar region, and extending down into the left iliac fossa, was an enormous aneurysm, which was situated behind the left kidney and descending colon: the sac of the aneurysm was incomplete behind, the posterior wall of the cavity being formed by the bodies of the vertebræ and lower ribs, which were exposed and eroded, and were in direct contact with the blood in the sac. The sac was full of coagulated blood; and on its anterior aspect had a lacerated opening about an inch in length, through which the blood had been poured into the peritoneal cavity. The walls of the sac did not appear to be formed of the coats of the aorta, but simply of consolidation of surrounding structures. It communicated with the abdominal aorta by a rounded opening, the size of a shilling, on its posterior wall. On passing the finger through this opening, it immediately came down on exposed bone. The bone in the left iliac fossa was exposed, but the sacro-iliac joint was sound (see 1519, H.).

Two cases of *nævus* were admitted. They occurred in infants.

One, which was situated at the back of the neck, was destroyed by nitric acid; the other, which was an inch in diameter and existed on the back, was removed by subcutaneous ligature.

Thirty-one cases of *varicose veins* of the lower limbs were admitted. Of these, a large proportion were complicated with the so-called varicose ulcers. In twenty instances the vessels were obliterated by subcutaneous section, and a permanent cure effected. In the remaining cases the support of an elastic stocking was thought more advisable.

In one instance a clot had formed in a varicose vein, and formed a tumour rather larger than a walnut, on the inner side of the right leg. It was situated in the course of a large vein, which could be felt entering and leaving it on drawing the tumour upwards and downwards,—by which means the vessel was put upon the stretch, and could be felt as a hard cord connected with the tumour. It was dissected out under chloroform (1875, H.) (see Prep. Path. Mus., and *Path. Soc. Trans.* vol. xviii.).

Five cases of *phlebitis* occurred. In two of these a needle was passed beneath the inflamed vein, and the disease arrested; suppuration occurred below the needle, whilst the parts above remained healthy. One case, in which the deep veins of the right lower limb were affected, proved fatal. There was no post-mortem examination.

Of diseases of the *lymphatics*, thirteen were cases of inflamed *absorbents*, twenty-four of *suppurating glands*—many of which were venereal—and two of *tumours of glands*. The nature of one of these was uncertain; the other was a case of scrofulous infiltration of the cervical glands, and proved fatal.

Diseases of the Respiratory Organs.—Among these were four cases of *disease of the larynx*. In one of these, in which the affection was of a syphilitic nature, laryngotomy was performed. In one case the patient, a woman aged 48, had suffered from pain and difficulty in swallowing for a twelvemonth; and for six months she had been unable to swallow solids. On examining the epiglottis with the finger, it was felt to be much enlarged, and roughened on its posterior surface. During deglutition, there was greater pain referred to the neighbourhood of the epiglottis than was experienced when it was touched. The alæ of the larynx appeared to be rather widely separated, and were tender on pressure. There were several enlarged and very hard glands near the angle of the lower jaw on the left side; the patient had a malignant aspect, both from emaciation and discoloration of the skin: she was discharged as incurable. (1576, T.)

The remaining nineteen cases occurred in patients who had been admitted into the surgical wards for some injury or disease. There were twelve cases of *bronchitis*, principally affecting patients with fractured ribs; three died. Four of *phthisis*, of which two died. Two of *pleurisy*, one of which proved fatal, in a case of amputation which had been performed in 1865. One case of *hooping-cough* occurred in a child who had spinal disease.

DISEASES OF THE NERVOUS SYSTEM.—Under this head are comprised diseases of the cerebro-spinal system and of its coverings.

Two cases of *epilepsy* occurred; one in which there was an old depressed fracture of the skull; in the other the patient was burnt. These are the only two instances in which the disease manifested itself during the patient's stay in the house; the other cases in which accidents were ascribed to epilepsy have not been entered here.

There were six cases of *delirium tremens*, occurring in patients who had met with accidents; two died. Two cases of *hemiplegia* are entered, and five of *disease of the brain;* these latter were probably due to some chronic inflammation of the brain-membranes, and occurred in patients who had met with accidents: the symptoms were relieved by purgation, low diet, and the iodide of potassium or bichloride of mercury. One case of *mania* is recorded. It occurred in a young woman who had been admitted with erysipelas of the scalp and face.

One case of *infantile paralysis* and three of *partial paralysis*, with one of *sciatica* and six of *neuralgia*, complete this class of cases.

DISEASES OF THE SKIN AND ITS APPENDAGES.—These present us with a very numerous set of cases, which it is impossible in the present work to consider in detail; such, however, as are of especial interest will be cursorily touched upon.

*Eczema* presented us with twenty-six examples. In four of these the disease had progressed to such an extent that ulcers formed beneath the original vesicles, producing an extremely painful and inflamed surface.

Fifteen cases are entered as *rupia;* under these are included several instances of rupial ulcer. These rapidly improved under calomel vapour-baths. In some instances these could not be borne, and the mineral acids, especially the dilute nitro-muriatic with bark, and sarsaparilla, or cod-liver oil, were substituted.

One other drug requires especial mention, and that is the iodide of potassium: given to patients in a low and cachectic condition, in doses of ten grains, three times a day, it was found that they rapidly improved and increased in weight. One case proved fatal from exhaustion. It occurred in a woman aged 37, whose limbs and face were more or less crusted with rupial scabs and ulcers, the alæ of the nose were partly eaten away. Cod-liver oil and syrup of the iodide of iron were administered, and for some three weeks she appeared to be doing well, the scabs fell off in numbers, and the ulcers commenced healing; calomel fumigation was also employed: but soon after this, the little strength she had gained began to decline, the healing process was arrested, the ulcers became foul, emitting a fetid odour, and in spite of stimulants she sank exhausted. (1243, H.) The body was excessively emaciated. The lungs were œdematous and anæmic; the liver was fatty, and in an early stage of amyloïd degeneration; the other organs were natural (see P. M. Book, No. 278).

*Psoriasis* occurred in four instances. It was treated with the liquor arsenicalis, or bichloride of mercury, and bark. One case of *psoriasis guttata* remained almost unaffected by treatment, until calomel-baths were made use of (1909, P.).

*Lichen* presented us with two examples; both were syphilitic; one was complicated with iritis, one with ulceration of the throat.

Two cases of *lupus non-exedens* and one of *lupus exedens* came under observation. The former were much benefited by the administration of cod-liver oil and the arsenical solution, with the topical application of an arsenical paste,* the latter persistently recurred after extirpation by the knife. The patient, a woman aged 30, had suffered five years previously from circum-orbital pain; this was followed by a rodent ulcer of the eyebrow. The diseased surface was removed by the knife three years subsequently, but had since reappeared. When admitted, there was an elevation of thickened tissue extending from the root of the nose to the scalp. On the left of this the forehead was depressed and seamed with white scars, which extended from the roots of the hair over the orbit (which was obliterated) to the cheek. Just above the centre of the malar bone was a small wart-like excrescence, and external to this a patch of ulceration, with red, sharply-defined edges. She complained of sharp pain, which extended from the root of the nose and seat of ulceration to the vertex. An incision was made down the middle line of the forehead from the roots of the hair to the nose, and the integument dissected outwards from the bone for about an inch and a half; the ulcerated surface was cut out, and the malar bone exposed; its surface being somewhat softened, it was scraped away.

On the second day nitric acid was applied to the exposed bone, and rest insured by a morphia draught at night. The wound almost healed in a week, and she was made an out-patient (1563, Ho.).†

Two cases of *ecthyma* occurred in syphilitic patients; in one case calomel vapour-baths, and in the other syrup of the iodide of iron, with cod-liver oil, produced the most beneficial effects.

Eight cases of *scabies* are recorded. In most of these the disease had become pustular. The application of sulphur ointment, with due attention to cleanliness, sufficed for a cure.

*Herpes*, *impetigo*, *acne*, *purpura*, *erythema*, *pityriasis*, and *urticaria*, each presented us with a single example of the disease. They call for no special remarks.

*Ulcers* of the leg presented us with every phase of the disease—indolent and inflamed, specific and non-specific, &c. They afforded a wide field for study.

One hundred and fifty-three cases were admitted. Nine were attacked with phagedæna, and in three instances the extensive slough-

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* One of these cases died of pyæmia in Jan. 1867.

† A third operation was found necessary in 1867.

ing necessitated amputation, and death ensued (see Amputation Statistics, Nos. 14, 15, 20).

In numerous instances varicose veins accompanied the disease, and their subcutaneous obliteration was followed by a cure of the affection both of the vein and integument.

Fifty-seven cases are recorded as *abscesses*. This is a very mixed class of cases, and contains instances in which suppuration occurred as the result of an injury, or without any known cause. Two died from exhaustion.

Six cases are entered under the head of *cancerous ulceration*, in the form of epithelioma. In four of these the diseased mass was extirpated. In one instance the patient, a man aged 61, would not submit to an operation; he had an epithelial growth on the left ring-finger, with an enlarged gland at the bend of the elbow. Acetic acid was applied, and the surface became more healthy (1921, P.). In a case of epithelioma of the lip, the disease was removed by an elliptical incision. In another of the face, the knife was also employed. A large fungoïd growth surrounded by unhealthy ulceration occupied the left cheek; and the whole face was covered with puckered cicatrices, as though from a burn. The whole of the diseased mass was cut away. The incision extended from the middle line almost to the angle of the jaw, and went down to the bone. Some suspicious points were touched with the actual cautery, and the whole was covered with chloride of zinc paste. The sloughs separated, and he was discharged with the wounds almost healed (419, P.). One case of epithelioma of the leg proved fatal from exhaustion; the patient was admitted in a dying state.

The penis was affected in two instances, and the labium in one. In the first cases the disease was removed with the écraseur, in the latter with the knife, and in it the bleeding was effectually arrested by means of the twisted suture.

Sixteen cases of *tumour* were admitted; viz. six *fatty*, six *sebaceous*, one *encysted*, and three *malignant*. The fatty and sebaceous tumours were all successfully removed. The former were found on the neck and upper extremities, with one in the labium; the latter in the scalp and face. One case of *encysted tumour* is recorded. The patient had been an in-patient in 1866, the tumour had been punctured and freely laid open, and then was made to suppurate by the introduction of a silver wire. She was in a weakly state when admitted, but the tumour had almost disappeared. Three cases of *malignant disease* were admitted. One occurred near the lower end of the femur, another in the glands of the axilla, after the removal of a tumour from the hand; both were discharged at their own request. The third was a case in which a mole assumed a malignant aspect. It occurred in a woman aged sixty-two, in whom a mole had existed on the right arm from infancy. Of late it had been increasing in size, and caustic had been applied, which caused it to ulcerate. It presented a fleshy appearance, was hard, red, and shining, and occasionally bled. It was

removed. (869, T.) Under the microscope it was found to contain neucleated cells, some of them of large size, others elongated, and filled with granular matter.

Four cases of *carbuncle* were admitted. They were treated by incisions, with generous diet and tonics. Three *boils*, three cases of *œdema*, eight of *onychia*, in two of which the nail was removed, and two of *corns* and *bunions*, call for no comments. One case of *conical* and *ulcerated stump*, in which amputation was performed, terminated fatally from pyæmia (see Table, No. 22). Three others were benefited by treatment.

One case of *elephantiasis* of the leg, that had existed for eighteen years, proved fatal after amputation (see Amp. Statistics, No. 16).

Diseases of the Eye, Ear, and Nose.—Taking them in the order enumerated, we find that of diseases of the eye fifty-five cases were admitted. Of *ophthalmia* there were seventeen cases, many of them due to struma and cold, and one to the contagion of gonorrhœal pus. Nine cases are entered as *corneitis;* these include ulceration, and opacity from whatever cause due. Ten cases are classed as *iritis*. Three of these were amongst the sequelæ of syphilis, and the rest were due to cold or rheumatism. One was complicated with severe inflammation of the sclerotic; the diagnostic symptom, in addition to the appearance of the eye, being the extreme and tensive pain in the eyeball. The treatment adopted in these cases consisted in the administration of calomel and opium pills to arrest the inflammation and produce absorption of the effused lymph, and in dilating the pupil by dropping a solution of atropine upon the surface of the eyeball, or by applying belladonna ointment around the orbit. When the patients applied in time, the adoption of these measures in every instance prevented the adhesion of the iris to the capsule of the lens. In rheumatic cases, the exhibition of colchicum and alkalies was found beneficial; and blisters applied behind the ear, or to the nape of the neck, were frequently found of service.

One case is entered as *choroïditis*. It occurred in a man who was suffering from secondary syphilis. There were several specific ulcerations on the legs. He complained of shooting pain on both sides of the head. Vision with the right eye was indistinct, and both pupils were irregular. A sclerotic zone surrounded both corneæ, that around the right being the most distinct. The globe was tense, and its mediæ were rather hazy. He was ordered syrup of the iodide of iron and cod-liver oil, and at night a pill composed of calomel and extract of hyoscyamus. Under this treatment the ulcers commenced healing, and he lost the pain in the head; but his vision was not improved, and "*falling lights*" occasionally appeared to descend to the ground from the outer angle of the right eye. When examined with the ophthalmoscope, the right optic disc was found to be indistinct at its upper and lower parts. The choroïdal glow was less distinct than it should have been, and the choroïd pigment was visible in various parts. The indistinct-

ness seemed to depend upon œdema of, and slight deposit in, the connective tissue of the optic disc and neighbouring retina. A calomel and opium pill was now administered night and morning, and the zone disappeared from the left eye, and became less marked in the right, whilst the "*falling lights*" appeared less frequently. The eyeball became less tense, the mediæ clearer, and the ophthalmoscope showed considerable absorption of the deposit near the optic disc. He was discharged in an improved state of health, with the sight of the right eye returning. He could see objects on the opposite side of the ward, though he was unable to distinguish faces. (2035, H.)

Ten cases of *cataract* were admitted, and in eight of these the obstruction to vision was removed; the operation of extraction being performed in seven cases, and of solution in one. The patients were provided with spectacles, and left the hospital with very good vision.

One case of *amaurosis* was admitted, and discharged incurable.

In one instance iridectomy was performed for *glaucoma*.

Five cases of *staphyloma* were admitted. In four of these the cornea was removed, and the globe allowed to collapse, in order that an artificial eye might be worn; and in one case the eyeball was enucleated, with the same object.

In two cases of *strabismus* the rectus muscle was divided.

One gelatinous polypus of the *ear* was admitted, in order that the growth might be removed (1383, H.).

*Polypus of the nose* presents us with five examples. In four of these the disease consisted of the mucous or gelatinous variety, and was removed with forceps.

The other was a case of *naso-pharyngeal polypus*. The patient, a man aged 27, had suffered for nearly a year from severe, and often alarming, hæmorrhage from the nose and throat. When admitted he had an anæmic appearance, and frequently suffered from epistaxis. The left nostril was dilated, and completely occluded by a large mass of polypus, which extended back into the pharynx. It was removed by the method recommended by Sir W. Ferguson. The wound was stitched together with silver sutures. No ligatures were required. An uninterrupted recovery ensued (774, Ho.).

One case of malignant tumour presenting in the nostril occurred in a man. It had been growing for six months, and entirely blocked up the right nostril and upper part of the pharynx, and pushed the right eye forwards. There was frequent hæmorrhage. The disease had spread too far to be removable by an operation, and the patient was discharged as incurable (987, H.).

Diseases of the Organs of Digestion.—These include diseases of the mouth and diseases of the rest of the alimentary canal. Among the first are two cases of *abscess in the mouth* from caries of the teeth. One of these proved fatal. The patient had been suffering from alveolar abscess for some months, and the suppuration extended to the neck, where an abscess had been opened. When admitted, the

whole of the right side of the neck was infiltrated with pus, and there were two discharging sinuses. The side of the face, as high as the zygomatic arch, was much swollen and indurated. He went on well for more than two months, when he suddenly had an attack of severe hæmorrhage from the mouth. Styptics were employed, but the bleeding frequently recurred, and he died in eleven days (267, P.). There was no post-mortem examination.

Eight cases are entered as *ulceration of mucous membrane*. One of these terminated fatally, and proved to be a case of diphtheria. The history was that of sore-throat for a month, but without evidence of syphilis. The left side of the soft palate was in a state of foul ulceration, surrounded by red sharply-defined edges. The right side of the palate was commencing to ulcerate, and the uvula was red and swollen. There was also ulceration at the back of the pharynx, as evidenced by the presence of suppuration. There was also pain during deglutition. Calomel-vapour was applied to the throat, and he went on well for about three weeks, when he became very low, and the throat very foul. He was ordered brandy, with a mixture of chlorate of potash, ammonia, opium, and bark; but he died soon after. (1882, H.) When examined the body was in good condition. The whole of the right lung felt solid and heavy, and was in a state of congestive pneumonia. The bronchial tubes were full of exudation, even to their minutest ramifications. In the largest bronchi this exudation formed a complete cast to the tube. It was also found, though to a less extent, in the trachea and larynx. The left lung was natural, but congested. The soft palate, epiglottis, and fauces were covered with the same exudation as was found in the bronchi. On the soft palate there was the cicatrix of an old ulceration. (See P. M. Book, No. 336.)

Four cases of *sore-throat* are recorded. They were of syphilitic origin.

Two cases of *quinsey* occurred; one in a patient admitted with concussion, the other in a patient who was suffering from varicose veins.

Three cases of *fissure of the palate* were admitted. One of these had been operated upon before; but union had not been perfect, and a second operation was required. The case was cured. The other two patients were taken away by their parents without leave.

One case of *epulis* is recorded. It was removed with the knife, but soon after recurred. At the second operation nitric acid was applied to the alveolar process from which the tumour grew; and the disease appeared to be thoroughly eradicated. (1809, T.)

Five cases of *hare-lip* were admitted. One was discharged at the request of the mother. Of the remaining four, two were double and two single fissures of the lip. The ordinary operation was performed in each case, in two successfully, but in the other two the wound did not unite, owing to the weakly condition of the children, and they were discharged for country air.

One patient with an enlarged tonsil was admitted, and the growth removed.

One case of *cancer* of the tongue was admitted, and discharged as incurable.

We now pass on to the consideration of some of the surgical diseases to which the remainder of the alimentary canal is liable. Taking *hernia* first, we shall enter at once on a most important series of cases, a short account of which may be found in the Table of Operations and volume of Hernia Statistics belonging to the Hospital, but for a detailed account the Case and Post-Mortem Books must be consulted. Thirty-nine cases were admitted; of these twenty were strangulated, ten were reducible, and nine irreducible. Three of the cases of strangulated intestine were reducible without operation; the gut being returned by the taxis, after the application of ice. Of the cases submitted to operation, six died. There were five cases of inguinal hernia, all of which were oblique and occurred in males. Four of these were acquired, and one was congenital. Three of these were enteroceles, and two enteroepiploceles; in one the omentum was ligatured and cut off, death resulting from peritonitis. Eleven were cases of femoral hernia; four in males, seven in females. In four cases the sac contained omentum as well as intestine, and in one omentum only; in three instances it was ligatured and cut off. There were five deaths; four due to peritonitis, and one to extravasation of fæces into the peritoneal cavity through an ulcer in the small intestine. One case of umbilical hernia in a female was operated on; recovery ensued. The sac was opened in every case. One patient with *artificial anus* was admitted in order that he might be fitted with an instrument.

One case of *ulceration of the rectum* was admitted. It was probably of a syphilitic nature.

Twenty-one cases of *piles* occurred. Nineteen cases of *fistula in ano* were admitted, and in ten of these the sinus was laid open. The double ligature was made use of in many instances, and the affection cured.

Five cases of *stricture of the rectum* were much benefited by the introduction of bougies. Two cases were entered as *prolapsus;* in one the protrusion did not recur after the expulsion of a round worm, *ascaris lumbricoïdes.*

Two cases of *fissure of the rectum* were admitted, in which the division of a few fibres of the external sphincter cured the affection.

Two cases are entered as *constipation.* In one of these the bowels had not been relieved for ten days, and vomiting had persisted for three days. When admitted there was great collapse and stercoraceous vomiting, the abdomen was tense, tympanitic, and painful; pulse quick and weak, countenance sunken. There was no hernia. After a purge and injection had been given, the bowels were freely relieved and the sickness stopped. In two days the patient was discharged at his own request. (186, L.)

Three cases of *cancer of the rectum* were admitted. Two of these were discharged unrelieved. In the third colotomy was performed, and the patient died.

The case was that of a woman aged 38, who had suffered from difficulty in defæcation for seven years, and from the passage of blood and offensive matter. For eight months she had been almost unable to pass anything. On introducing the finger into the rectum, a hard ulcerated fungoïd mass could be felt constricting the canal. The examination caused great pain. She was not much emaciated, and did not present the malignant cachexia. Amussat's operation was performed, but she gradually sank, and died in three days. (145, Ho.) There was no post-mortem examination.

Diseases of the Urinary Organs.—Under these are considered diseases of the kidney, bladder, and urethra. Two cases of albuminuria occurred; one in a case of abscess in the loin and amyloïd disease, the other in a case of excision of the knee. Both terminated fatally.

Seven cases of *irritable bladder* were admitted. Two occurred in females, five in males, all adults. In these pus and mucus were found in the urine, and in one a hollow sound detected a rough elevation on the right side of the bladder, but there was no bleeding. Alkalies and anodynes were at first administered; and subsequently, when the water became clearer, and there was less pain during micturition, iron and the mineral acids were substituted, with excellent results.

Five cases of *retention of urine* were admitted; they were relieved by a warm bath and opium. In one instance the retention was due to the impaction of a stone in the urethra. The urine was drawn off with a catheter; and subsequently lithotrity was performed.

*Stone in the bladder* presented us with nine examples; in four of these the lateral operation of lithotomy was performed, and in five lithotrity. One case of lithotomy terminated fatally from suppuration in the kidneys, and one of lithotrity from cystitis.

One case is entered as *strumous disease of the bladder*. The patient died, and there was no post-mortem examination.

One case of *urethral fistula* occurred. Subjoined is a short account of the case. A boy, aged 8, was admitted on June 26th with phimosis. The prepuce was greatly distended, swollen, and lengthened; there was a good deal of pain. On July 3d the swelling had greatly diminished, and there was an ulcerated crack on the under surface of the penis, just in front of the scrotum. A fistulous opening soon formed at this spot, and the urine passed both through it and the meatus urinarius. On the 28th he was discharged for a time. He was re-admitted on August 16th, and on the 23d the edges of the fistula were pared, and brought together from before backwards with silver sutures; the prepuce at the same time being slit up on its dorsal surface, a catheter was passed and tied in. The urine escaped entirely through the instrument, which was withdrawn on the 9th of September, the wound having entirely healed. (1298, L.)

Two cases of *vascular tumour of the female urethra* were admitted; both were removed with the knife.

Forty-two cases of organic *stricture of the urethra* were admitted, fourteen of which were complicated with urinary abscess and fistula. Three died, one of pyæmia, one of suppuration in the kidneys and uræmic poisoning, and one of abscess in the prostate, which produced symptoms closely resembling those of cholera. (811, T. See P. M. Book, No. 181.)* In three cases perinæal section was successfully performed. The remaining thirty-six cases were all treated by gradual dilation of the stricture by means of instruments. Nine cases of *enlarged prostate* were admitted, in which the disease had altered the normal condition of the urine; one died. By drawing off the water regularly, and in many instances by washing out the bladder with tepid water, these patients were much benefited.

Two cases of *extravasation of urine* were admitted; the usual treatment was adopted. One recovered, and one died. The fatal case was that of a man, aged 48, who had been an in-patient some years ago with some urinary affection, the nature of which the patient could not explain. He had since been in China, and owing to a recurrence of the symptoms, returned home for medical advice. When admitted, there was considerable redness, swelling, and œdema of the scrotum, perinæum, and lower part of the abdomen. Incisions were made into the scrotum; but on the following day the swelling had increased, and the parts were very foul. The patient was therefore placed on the operating-table, and the finger was introduced into the rectum, and the prostate found to be enormously enlarged. A bistoury was therefore plunged into it, but without effect. An incision was now made in the median line of the perinæum, and a fœtid abscess opened. Some more incisions were made into the swollen tissues, and the man was sent to bed. He was in a very low condition, and never rallied, but died on the following morning. (783, T.) The kidneys were large, their secreting structure was diminished in quantity and infiltrated with pus; the calices and ureters were much dilated. The bladder was contracted, its muscular coat enormously hypertrophied, and its inner surface somewhat sacculated. The prostate gland was much enlarged and indurated; on section, a large abscess was found in its substance with thick walls. There was also another abscess in front of the prostate which communicated with the rectum, and also with one of the incisions in the perinæum, but it did not open into the urethra. In the urethra was a false passage running for about three quarters of an inch in the submucous tissue, but there was no appearance of any stricture. (See P. M. Book, No. 160.)

One case of *spasmodic stricture* occurred in a patient who was admitted with a contusion of the hip.

A case of *recto-urethral fistula* was admitted. The patient, a child

* For a detailed account of this case see the *Medical Press and Circular*, March 20, 1867, p. 272, as related by Dr. Ogle.

three months old, had been born with an imperforate anus, and two days after birth an opening had been made into the gut. It was a rare form of the disease, in which the communication between the rectum and urinary tract was of small size. In cases in which the gut, as in this instance, descends almost to the perinæum, the rectum and bladder generally communicate by a large opening.

The anal orifice was very small, and fæces and urine passed together both through it and the urethra. A staff introduced into the bladder could be touched by a probe introduced through the anus. An incision about half an inch in length was made backwards in the median line of the perinæum; the finger was then passed into the rectum, and a small orifice, about large enough to admit a No. 8 or 10 catheter, was found communicating with the bladder, in the situation which should have been occupied by the prostate, which in this case was either cleft or absent. The wound was prevented from contracting by the daily introduction of the finger; and the patient was discharged with instructions to the mother to persist in that plan of treatment. The parts were too small to admit of a free incision, and the mucous membrane of the rectum being drawn down and stitched to the skin, which is the proper course to be pursued with maturer patients.

Diseases of the Male Organs of Generation.—Seven cases of *primary syphilis* occurred, and sixteen of *secondary*. Of the former six were of the suppurating variety, and one of the Hunterian.

Five cases of *gonorrhœa* were admitted, one complicated with purulent ophthalmia, and four with synovitis.

Three cases of *phimosis* and five of *paraphimosis* were admitted.

Twelve cases of *hydrocele* are recorded. In eleven of these the ordinary operation for the radical cure was successful. One case resisted repeated and strongly irritating injections, and it was found necessary to lay the tunica vaginalis freely open, and allow it to granulate from the bottom. (1696, Ho.)

One case of *hæmatocele* was admitted. It was produced two days previously by a kick from a horse. Rest and the application of a cold lotion caused absorption of the effused blood in a week.

One case is entered as *malignant disease*. It occurred in a patient aged seventy-two; an operation was not deemed advisable.

Fourteen cases of *orchitis* were admitted; of these eight were *acute* and six *chronic*. The former were frequently due to gonorrhœa, and were treated by rest, a tepid lotion, and the administration of antimony, with calomel and opium; the latter were in three instances due to syphilis, and in two of them there was a fungous protrusion of the testicle; in these instances the red precipitate powder was applied, and the same general treatment pursued as in the other cases, viz. the administration of cod-liver oil, and syrup of the iodide of iron, or mercury, and the local application of the blue ointment.

Two cases of *cancer* of the penis were admitted in order that the disease might be removed.

Two cases of *lacuna abscess* of the urethra are recorded; both burst into the urethra.

DISEASES OF THE FEMALE ORGANS OF GENERATION.—In this class are arranged, first, diseases of the breast; secondly, of the external organs of generation, with the uterus and its appendages.

Seven cases of *abscess* of the breast occurred; four of these took place during lactation, and the remaining three originated without assignable cause.

Nine cases of *tumour* of the breast were admitted. Two of these were cases of sero-cystic disease, in which the disease was removed.

One patient during convalescence was attacked with scarlatina, for which she was transferred to the physician.

Seven were cases of *scirrhus*, and in five of these amputation of the breast was performed; in one the disease had been previously removed, and had returned in the cicatrix. Potassa fusa was applied to the wound after the removal of the growth. One case terminated fatally from granular kidneys and fatty heart.

Of the remaining three cases, one was discharged for re-admission, and two were incurable; in one of these acetic acid was injected, and found ineffectual. Acetic acid was also injected into an enlarged axillary gland, with the effect of destroying it by suppuration; the mamma was affected with scirrhus, and was removed; the disease returned in the cicatrix, but not in the axilla. (1551, Ho.)

Among diseases of the external *organs of generation* we find four cases of *abscess of the labium*, one of *fatty* and one of *fibro-cellular* tumour, with one of *epithelioma*, all of which were removed; and one case of *condylomata*.

Six cases of *primary syphilis*, comprising Hunterian and soft chancres; six cases of *gonorrhœa;* and sixteen of *secondary syphilis*, were admitted during the year. One case of *vesico-vaginal fistula* was admitted, and cured by operation. One case of *cancer* of the uterus and one of *fibrous tumour* occurred; but they were discharged, being unfit for operation.

Three cases are classed as *polypus* of the uterus: in two instances the growth was removed by ligature, in the other the patient was discharged at her own request.

Three cases of *ovarian cyst* were admitted; two merely for paracentesis, and one with a view to operation. The patient, aged 28, gave the following history. After her confinement some seven years previously, the abdomen commenced swelling, it increased rapidly in size, and paracentesis was performed. This operation had been repeated twenty-six times; the intervals between each had gradually become shorter, latterly being only of a month's duration. The last tapping took place three weeks ago. The abdomen was uniformly enlarged, elastic, and fluctuating in every part, except on the left side, where there was a large firm mass. The os uteri was healthy, and pressed down almost to the outlet of the pelvis; the cervix was short;

and the parts around were elastic. The patient had no pain, but felt a sensation of tension of the abdomen; she was considerably emaciated. Over the apex of the left lung there was tubular breathing, with dulness on percussion, and increased vocal resonance. There was no cough. The cyst was tapped, and twenty-seven pints of viscid fluid containing much albumen were drawn off. The mass on the left side of the abdomen could now be distinctly felt; it had firm well-marked edges, and was movable; it appeared to be adherent to another mass occupying the left lumbar and inguinal regions; a third mass was also found in the right iliac region. In three weeks the cyst had refilled; it was tapped, and thirty-two pints of fluid were drawn off. After the relations and connections of these cysts had been attentively considered, the case was deemed unfavourable for operation.

One case of ruptured perinæum terminated fatally from pyæmia, after operation. The rupture had taken place eight years previously, and the patient was anxious to have something done, as she suffered great distress from prolapse of the uterus, and was unable to retain a pessary. (See P. M. Book, No. 67.)

Fourteen cases of hysteria complete our list of female diseases. They chiefly simulated diseases of the joints or spine. In one case the hip was contracted on the pelvis, and an appearance of shortening was given to the limb; its use was restored after straightening the thigh by means of a long splint, and a weight attached to the heel.

# TABULAR STATEMENT OF OPERATIONS PERFORMED DURING 1866.

## Class I.

*Operations on the Head, Neck, and Face.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | Uwin C. (357 T.) | | M. | Compound depressed fracture, without brain symptoms. | Wound enlarged, and depressed bone removed. | Died, 2d day. | The bone was comminuted and depressed, the dura mater was injured, and brain-matter escaped. |
| 2. | Andrew N. (1317 L.) | 19 | M. | Compound depressed fracture. | Trephining. | Died, 8 days. | Patient did well for four days; when rigor, sweating, and delirium set in. Abscesses were found in the brain. |
| 3. | Matilda F. (1563 Ho.) | 30 | F. | Lupus exedens of the face. | Removal with the knife, and nitric acid applied. | Recovered, 10 days. | The disease commenced in the eyebrows five years previously, and was preceded by circum-orbital pain. It had been removed in the autumn of 1864. |
| 4. | Thomas E. (419 P.) | 38 | M. | Epithelioma of the face. | Removal with the knife, actual cautery, and chloride-of-zinc paste. | Recovered, 54 days. | |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 5. | William T. (1714 H.) | 59 | M. | Epithelioma of lip. | Removal by elliptical incision. | Recovered, 21 days. | |
| 6. | Fred. D. (781 T.) | 18 | M. | Fissure of soft palate. | Staphyloraphy. | Recovered, 8 days. | The wound did not unite, and patient left without leave. |
| 7. | Amos S. (774 Ho.) | 27 | M. | Naso-pharyngeal polypus. | Removal by Sir W. Ferguson's method. | Recovered, 42 days. | |
| 8. | James S. (1118 L.) | 10 | M. | Myeloid tumour of lower jaw. | Removal with bone forceps. | Recovered, 30 days. | |
| 9. | Henry W. (1163 P.) | 41 | M. | Syphilitic laryngitis. | Laryngotomy. | Recovered, 93 days. | |
| 10. | John S. (1065 P.) | 15 | M. | Cicatrix after burn. | Cicatrix freed from its attachments. | Recovered, 56 days. | |

In this class are also two operations for the removal of dead bone; three sebaceous tumour of scalp, two of face; two fatty tumour of neck; five for the cure of hare-lip; one epulis; four polypus nasi; one polypus auri; eight for cataract—seven by extraction, one by solution; four removal of the cornea in staphyloma; two removal of eyeball; one iridectomy for glaucoma; two for strabismus; and in one case of wry-neck the tendon of the sternomastoïd muscle was divided.

## CLASS II.—*Operations on the Upper Extremity.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | William F. (1113 L.) | 26 | M. | Caries of head of humerus. | Head of bone excised. | Recovered, 76 days. | The glenoid cavity was healthy. There was slight movement between the humerus and scapula. |
| 2. | Emily D. (722 and 2076 L.) | 19 | F. | Ankylosis of elbow, and destruction of joint. | Excision of elbow-joint. | Recovered. | Amputation was subsequently performed on January 31st, 1867. |
| 3. | James B. (1514 Ho.) | 36 | M. | Strumous disease of wrist-joint. | Excision by Lister's method. | Recovered, 59 days. | |
| 4. | Thomas C. (1051 H.) | 27 | M. | Wound of muscular artery in arm. | Ligature of both ends of the vessel. | Recovered, 10 days. | |
| 5. | James C. (1232 H.) | | M. | Wound of ulnar artery. | Ligature of both ends of the vessel. | Recovered, 6 days. | |
| 6. | Michael S. (1504 L.) | 28 | M. | Inflammation of cephalic vein. | Obliteration of vessel by subcutaneous section. | Recovered, 58 days. | The patient was suffering from phagedæna after compound fracture of forearm. |
| 7. | Ann H. (479 T.) | 49 | F. | Fracture of olecranon; abscess of elbow-joint. | Amputation by the circular method. | Died, 5 days. | This patient died of pyæmia. |
| 8. | John D. (324 L.) | 24 | M. | Abscess of wrist-joint. | Excision by means of a transverse incision across the back of the wrist. | Recovered, 107 days. | The disease was the result of inflammation supervening upon a cut on the back of the wrist. |

In this class are also fifteen cases of partial amputation of the hand, three died—two of pyæmia, one of tetanus; two of removal of dead bone; four reductions of dislocated shoulder; two of removal of fatty tumours; and one malignant tumour.

## CLASS III.

*Operations on the Thorax.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | Margrt. M. (241 T.) | 40 | F. | Scirrhus of cicatrix, after amputation of breast. | Extirpation of diseased mass, and subsequent application of potassa fusa. | Relieved, 126 days. | The breast had been amputated; but the wound never healed. |
| 2. | Mary W. (561 P.) | 44 | F. | Scirrhus of breast. | Amputation of breast. | Recovered, 24 days. | |
| 3. | Mary M. (1551 H.) | 39 | F. | Scirrhus of breast. | Amputation of breast, and chloride of zinc applied. | Recovered, 42 days. | An enlarged gland in the axilla was injected with acetic acid, and destroyed; the disease returned in the cicatrix. |
| 4. | Elizabeth H. (1562 H.) | 65 | F. | Scirrhus of breast. | Removal of tumour. | Recovered, 27 days. | |
| 5. | Elizabeth C. (1751 P.) | 24 | F. | Chronic mammary tumour of breast. | Removal of tumour. | Recovered, 15 days. | |
| 6. | Charlotte P. (1991 B.) | 36 | F. | Chronic mammary tumour of breast. | Removal of tumour. | Recovered, 23 days. | This patient was transferred to the physician for scarlatina before the wound had healed. |
| 7. | Mary C. (759 L.) | 56 | F. | Scirrhus of breast. | Amputation of breast. | Died, 29 days. | She died of granular kidneys, fatty heart, and bed-sores. |
| 8. | Abelina O. (15 L.) | 5m. | F. | Nævus on back. | Removal by subcutaneous ligature. | Recovered, 10 days. | |

## CLASS IV.

### *Operations on the Abdomen.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | Richard C. (142 Ho.) | 52 | M. | Strangulated femoral hernia, 4 hours; ruptured 19 years. | Sac opened; contained congested gut, omentum, and serum. | Recovered, 30 days. | The omentum was removed at the operation. |
| 2. | Ann F. (350 Ho.) | 40 | F. | Strangulated femoral hernia, 4 days; ruptured 12 months. | Sac opened; contained gut greatly congested, flakes of lymph, and a little bloody fluid. | Recovered, 26 days. | The bowels acted spontaneously on the sixth day; recovery was uninterrupted. |
| 3. | Robert R. (394 H.) | 54 | M. | Strangulated femoral hernia, 7 days; ruptured 8 years. | Sac opened; contained gangrenous gut, and but little fluid. | Died, 8 days. | The gut was sphacelated; it was laid open and stitched to the edges of the wound; peritonitis proved fatal. |
| 4. | Christoph. C. (429 P.) | 47 | M. | Strangulated inguinal hernia, 2 days; ruptured 12 years. | Sac opened; contained the great omentum and whole of the transverse colon in a rough and blackened state. | Died, 3 days. | This was an immense hernia, as large as the head of an adult; the omentum was removed. |
| 5. | Mary J. (709 P.) | 60 | F. | Strangulated umbilical hernia; ruptured 3 months. | Sac opened. | Recovered, 59 days. | |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 6. | Emma P. (788 P.) | 53 | F. | Strangulated femoral hernia. | Sac opened; contained omentum only. | Died, 40 days. | She died of peritonitis. |
| 7. | Thomas B. (846 H.) | 48 | M. | Strangulated femoral hernia. | Sac opened; contained a knuckle of small intestine greatly congested. | Died same day. | There were suppurating glands in the groin on the same side as the rupture. The post-mortem revealed extravasated fæces in the peritoneal cavity, and an ulceration the size of a sixpence in the ilium. |
| 8. | Lydia F. (1192 T.) | 60 | F. | Strangulated femoral hernia, 24 hours; ruptured 6 months. | Sac opened; contained small intestine greatly congested, and about ℥ij. of bloody fluid. | Died, 4 days. | There was stercoraceous vomiting. She died of peritonitis. |
| 9. | Henry G. (1223 H.) | 47 | M. | Strangulated inguinal hernia, 20 hours; ruptured 40 years. | Sac opened; contained small intestine and clear serum. | Recovered, 18 days. | Recovery was uninterrupted. |
| 10. | Ann F. (1263 P.) | 63 | F. | Strangulated femoral hernia, 24 hours. | Sac opened; contained a knuckle of small intestine greatly congested, and a little dark serum. | Recovered, 31 days. | Her recovery was retarded by suppuration in the wound. |
| 11. | Eliza C. (1267 P.) | 60 | F. | Strangulated femoral hernia, 24 hours; ruptured 23 years. | Sac opened; contained small intestine, a large piece of omentum, and a little fluid. | Died, 8 days. | She died of peritonitis. No post-mortem. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12. | Charles H. (1534 Ho.) | 33 | M. | Strangulated inguinal hernia, 12 hours; ruptured 7 years. | Sac opened; contained small intestine greatly congested, and straw-coloured serum. | Recovered, 24 days. | Violent taxis had been employed before his admission. Whilst the gut was being returned, a rent occurred in it from the pressure of its contents. Six stitches of the glover's suture united the tear; uninterrupted recovery ensued. |
| 13. | William A. (1571 H.) | 19 | M. | Strangulated inguinal hernia, 4 hours. | Sac opened; contained small intestine, omentum, and a little clear serum. | Recovered, 17 days. | The sac was formed by the tunica vaginalis. The omentum was ligatured and cut off. |
| 14. | James R. (1654 L.) | 23 | M. | Strangulated inguinal hernia, 5½ hours; ruptured 22 years. | Sac opened; contained small intestine twisted on itself, and a little clear serum. | Recovered, 28 days. | |
| 15. | Sophia G. (1759 P.) | 39 | F. | Strangulated femoral hernia, 28 hours; ruptured 1 year. | Sac opened; contained omentum adherent to the neck of the sac, except behind, and clear serum. | Recovered, 19 days. | |
| 16. | Charles T. (1894 H.) | 77 | M. | Strangulated femoral hernia, 50 hours; ruptured 16 years. | Sac opened; contained small intestine congested and a little dark-coloured serum. | Recovered, 24 days. | The stricture was very tight, but the constitutional symptoms were slight. |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 17. | Sarah M. (2069 H.) | 46 | F. | Strangulated femoral hernia, 10 hours; ruptured 20 years. | Sac opened; contained small intestine slightly congested, omentum adherent, and a little clear serum. | Recovered, 54 days. | The omentum was ligatured and cut off. Her recovery was retarded by suppuration in the wound. |
| 18. | Isabella Y. (145 Ho.) | 38 | F. | Malignant disease of the rectum. | Amussat's operation. | Died, 3 days. | She died of peritonitis. (See Post-mortem Book No. 49.) |

With these were also ten operations for fistula in ano; two for fissure of the rectum; and eleven for the cure of piles.

## CLASS V.

### *Operations on the Genito-urinary Organs.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | William M. (1115 L.) | 40 | M. | Epithelioma of penis. | Amputation of penis. | Relieved, 18 days. | The operation was performed with the écraseur. |
| 2. | Richard F. (581 L.) | 23 | M. | Epithelioma of penis. | Amputation of pen . | Relieved, 37 days. | The écraseur was employed. The disease returned. |
| 3. | Jane H. (1592 Ho.) | 64 | F. | Epithelioma of labium. | Removal of diseased mass with knife. | Relieved, 51 days. | The disease had been removed. Bleeding was restrained by the twisted suture. |
| 4. | Eliza M. (1384 L.) | 26 | F. | Vascular tumour of urethra. | Removed with scissors. | Recovered, 61 days. | |
| 5. | Sarah B. (575 L.) | 23 | F. | Vascular tumour of urethra. | Removed by an elliptical incision. | Recovered, 24 days. | |
| 6. | Eliza H. (346 L.) | 26 | F. | Fibro-cellular tumour of labium. | Removed with scissors, and actual cautery applied. | Recovered, 11 days. | |
| 7. | Sarah E. (1027 H.) | 24 | F. | Fatty tumour of labium. | Tumour dissected out. | Recovered, 25 days. | |
| 8. | Ellen R. (1620 T.) | 38 | F. | Polypus uteri. | Removed by ligature. | Recovered, 13 days. | The tumour came away during the application of the ligature. |
| 9. | Susan D. (279 P.) | 48 | F. | Ruptured perinæum. | Plastic operation. | Died, 9 days. | She died of pyæmia. |
| 10. | Mary Ann C. (1792 L.) | 31 | F. | Vesico-vaginal fistula. | Plastic operation. | Recovered, 38 days. | |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 11. | Thomas E. (1298 L.) | 8 | M. | Urethral fistula. | Edges pared, and brought together from before backwards. | Recovered, 20 days. | The fistula had been caused by phymosis. |
| 12. | Walter C. (2027 Ho.) | 3m. | M. | Recto-urethral fistula. | Anus enlarged by incision. | Relieved, 10 days. | |
| 13. | George R. (867 T.) | 30 | M. | Stricture. | Urethra opened from perinæum. | Recovered, 63 days. | |
| 14. | Thomas S. (1116 L.) | 14 | M. | Impermeable stricture. Perinæal fistula. | Perinæal section. | Recovered, 84 days. | |
| 15. | John P. | 31 | M. | Impermeable stricture. Perinæal fistula. | Perinæal section. | Recovered, 62 days. | |
| 16. | Alexander T. (2075 P.) | 36 | M. | Impermeable stricture. Perinæal fistula. | Perinæal section. | Recovered, 45 days. | |
| 17. | George B. (35 L.) | 4 | M. | Stone in the bladder. | Lithotrity. Crushed once. | Died, 12 days. | Death resulted from cystitis. The stone consisted of triple phosphate. |
| 18. | Joseph J. (268 P.) | 66 | M. | Stone in the bladder. | Lithotrity. Stone crushed four times. | Recovered, 65 days. | The stone consisted of lithic acid. |
| 19. | Martin E. | | M. | Stone in the bladder. | Lithotomy. | Recovered, 30 days. | The stone consisted of triple phosphate. |
| 20. | Samuel F. (864 H.) | 58 | M. | Stone in the bladder. | Lithotrity. Crushed three times. | Recovered, 33 days. | The stone consisted of lithic acid. |
| 21. | Isaac R. (1285 P.) | | M. | Stone in the bladder. | Lithotrity. Crushed four times. | Recovered, 57 days. | The stone consisted of lithic acid. |
| 22. | William H. (1581 H.) | 11 | M. | Stone in the bladder. | Lithotomy. | Recovered, 29 days. | |
| 23. | John J. (1292 L.) | 29 | M. | Stone in the bladder. | Lithotomy. | Died, 102 days. | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. | Henry H. (1502 L.) | 55 | M. | Fragment of a catheter in the bladder. | Lithotomy. | Recovered, 62 days. | Patient had stricture, and was in the habit of passing a catheter for himself; a portion of one broke off in the bladder the day before his admission. |
| 25. | Griffith W. (1967 L.) | 20 | M. | Stone in the bladder. | Lithotrity. Crushed from two to four times, at twelve separate sittings. | Recovered, 198 days. | Had suffered from pain in the perinæum and penis for four years and a half. Had also passed blood in the urine. Clover's apparatus was found very efficacious in removing the fragments of crushed calculus. |

In this class are twelve operations for the cure of hydrocele; one for varicocele; one for phimosis; and three for paraphimosis.

## Class VI.

*Operations on the Lower Extremity.*

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | Hector M. (65 H.) | 24 | M. | Ankylosis of knee-joint. | Amputation of thigh by large anterior flap. | Recovered, 91 days. | The disease was of seventeen years' standing, and the joint was fixed at a right angle; the limb was wasted and useless, and was removed at the patient's request. An admirable stump resulted. |
| 2. | Edward J. (178 B.) | 25 | M. | Rupture of popliteal artery. | Amputation of the thigh by the double flap method. | Died, 20 days. | The limb had been struck by a crowbar six weeks before his admission; he was in a very low condition. |
| 3. | Charles D. (164 P.) | 19 | M. | Compound fracture of the leg, with great ecchymosis, followed by gangrene. | Amputation of the thigh by the circular method. | Died, 25 days. | The stump sloughed, and there was secondary hæmorrhage from the femoral artery. |
| 4. | Thomas J. (193 L.) | 18 | M. | Compound fracture to left knee-joint; extensive laceration of soft parts. | Amputation of the thigh by the flap method. | Died same day. | This man had caught his leg in some machinery; he was greatly collapsed, and never rallied. |
| 5. | Albert K. (299 L.) | 19 | M. | Disease of knee. | Amputation of the thigh by Teale's method. | Recovered, 20 days. | Recovery was rapid and uninterrupted. |
| 6. | William M. (238 P.) | 18 | M. | Necrosis of tibia; phagedæna. | Amputation of the thigh by the circular method. | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7. | William L. (472 Ho.) | 11 | M. | Abscess of knee-joint. | Amputation of the thigh by the circular method. | Recovered, 143 days. | |
| 8. | James P. (60 T.) | 42 | M. | Phagedænic ulcer of leg; secondary hæmorrhage. | Amputation of the thigh by the double flap method. | Died, 10 days. | The hæmorrhage proceeded from the anterior tibial artery; he died from exhaustion. |
| 9. | William F. (1809; 65 L.) | 53 | M. | Phagedænic ulcer of leg; secondary hæmorrhage. | Amputation of the leg by the flap method. | Died, 35 days. | Patient was in a weak state; the flaps sloughed; and he died of pleuropneumonia (see Post-mortem Book, No. 179). |
| 10. | Maurice H. (340 T.) | 66 | M. | Elephantiasis of foot and leg. | Amuptation through the knee-joint. | Died, 37 days. | The disease had existed for eighteen years; a little sloughing of the flaps followed the operation, and patient gradually sank. |
| 11. | James R. J. (1204 P.) | 13 | M. | Compound comminuted fracture of leg. | Amputation through the knee-joint. | Died, 50 days. | Phagedæna destroyed the anterior flap and exposed the bone; he died of exhaustion. |
| 12. | Charles W. (1117 L.) | 43 | M. | Sloughing ulcer of leg. | Amputation of the thigh. | Died, 3 days. | He died from exhaustion. |
| 13. | William S. (710 P.) | 48 | M. | Phagedæna, after compound fracture of leg. | Amputation through the knee-joint (Symes'). | Recovered, 38 days. | At the time of the operation this man was in the last stage of exhaustion, but he gradually rallied, and recovered. |
| 14. | Eliza Ann C. (1473 L.) | 53 | F. | Abscess of knee-joint. | Amputation of the thigh by the circular method. | Died, 12 days. | On the fourth day after the operation pyæmia set in, and proved fatal in eight days. |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 15. | Evan L. (916 P.) | 29 | M. | Compound comminuted fracture of leg. | Amputation through the knee-joint. | Recovered, 86 days. | An attack of phagedæna and the formation of abscesses in the stump, retarded recovery. |
| 16. | John D. (1516 Ho.) | 36 | M. | Old disease of knee-joint. | Amputation of the thigh by the double flap method. | Recovered, 41 days. | The anterior flap sloughed over the end of the femur, which became exposed. In June 1867 some necrosed bone was removed. Patient's health had greatly improved. |
| 17. | Grace M. (53 B.) | 38 | F. | Disease of ankle-joint. | Amputation of the leg by the double flap method. | Recovered, 35 days. | She recovered with an admirable stump. |
| 18. | Mary M. (91 L.) | 52 | F. | Disease of ankle-joint. | Amputation of the leg by a large posterior flap. | Recovered, 91 days. | Recovery was retarded by sloughing of the flaps. |
| 19. | Georgina C. (4 L.) | 19 | F. | Disease of astragalo-calcanean joint. | Amputation of the leg (modified Teale). | Recovered, 187 days. | She recovered with a very useful limb. |
| 20. | Edward C. (224 Ho.) | 39 | M. | Disease of os calcis. | Amputation of the leg by the double flap method. | | |
| 21. | William F. (341 T.) | 33 | M. | Disease of ankle-joint. | Amputation of the leg. | Recovered, 57 days. | |
| 22. | Henry B. (809 Ho.) | 40 | M. | Ulcerated stump. | Amputation of the leg (modified Teale). | Died, 9 days. | The foot had been amputated in 1863. The stump never healed. He died of pyæmia. |
| 23. | Henry M. (1240 L.) | 34 | M. | Phagedæna, after compound fracture. | Amputation of the leg by the flap method. | Died, 9 days. | This man died of pyæmia. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. | William B. (1616 Ho.) | 38 | M. | Secondary hæmorrhage after compound fracture. | | Died, 19 days. | Pyæmia set in two days after the operation, of which he died. |
| 25. | George F. (65 P.) | 25 | M. | Strumous disease of the tarsus. | Amputation at the ankle-joint by Symes' method. | Recovered, 37 days. | This patient had incipient phthisis. After the operation the chest-symptoms abated, and he recovered with a good stump. |
| 26. | William G. (305 P.) | 28 | M. | Sloughing wound and disease of ankle-joint. | Amputation of the foot at the ankle-joint. | Recovered, 27 days. | A sloughing wound laid open the ankle-joint. The flap was made from the outer side. |
| 27. | Elizabeth G. (1060 P.) | 38 | F. | Disease of ankle-joint. | Amputation of the foot by Symes' method. | Recovered, 36 days. | |
| 28. | Henry C. (1445 P.) | 64 | M. | Disease of os calcis. | Amputation of the foot by Symes' method. | Recovered, 217 days. | Patient was in a feeble state of health, and abscesses formed in the stump, which retarded recovery. |
| 29. | William K. (2000 P.) | 30 | M. | Caries of tarsus. | Amputation of the foot by Symes' method. | Recovered, 35 days. | The posterior flap sloughed, but the wound healed, and he left with every prospect of a useful limb. |
| 30. | Edward D. (16 L.) | 8 | M. | Disease of hip. | Excision by longitudinal incision. | Recovered. | |
| 31. | Charlotte C. (260 P.) | 15 | F. | Strumous disease of knee. | Excision by semilunar flap. | Recovered, 143 days. | This patient was subsequently re-admitted, and died of amyloid disease of the kidneys. |

| No. | Name. | Age. | Sex. | Nature of disease. | Nature of operation. | Result, and at what date. | Remarks. |
|---|---|---|---|---|---|---|---|
| 32. | Richard P. (1019 L.) | 15 | M. | Strumous disease of knee-joint. | Excision by semilunar flap. | Recovered, 193 days. | Recovery was retarded by two attacks of phagedæna. He left the Hospital with every prospect of a useful limb. |
| 33. | Francis M. (571 B.) | 18 | M. | Exostosis of femur. | Removal with the saw. | Recovered, 29 days. | |
| 34. | Hen. T. G. (1493 L.) | 19 | M. | Traumatic aneurysm in ham. | Acupressure. | Recovered, 25 days. | |
| 35. | Jane P. (1875 H.) | 26 | F. | Cyst of vein. | Tumour dissected out. | Recovered, 52 days. | Vide Prep. Cat. |
| 36. | Elizab. B. (328 B.) | 18 | F. | Loose cartilage of knee-joint. | Removal by subcutaneous section. | Recovered, 31 days. | The cartilage was adherent to the patella. |
| 37. | Elizab. D. (363 T.) | 6 | F. | Caries of os calcis. | Removal by a T-shaped incision. | Recovered, 48 days. | |

This class also includes the removal of one bursal tumour; four in-growing toe-nails; nine of dead bone necrosed or carious; five of amputation of toes; twenty cases of the radical cure of varicose veins by subcutaneous section; and seven cases of tenotomy. In all two hundred and fifty-three operations were performed.

## CASES ADMITTED DURING THE YEAR 1866.

| Nature of injury. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with other injury. | Complicated with disease. | Operations. |
|---|---|---|---|---|---|---|
| **A. General injuries:** | | | | | | |
| *a.* Burns | 26 | 7 | 27 | . . | 4 | |
| *b.* Scalds | 34 | 7 | 20·6 | | | |
| **B. Local injuries:** | | | | | | |
| 1. Of the head: | | | | | | |
| *a.* Simple scalp-wounds (bone not exposed) | 56 | . . | . . | 9 | 3 | 1 |
| *b.* Scalp-wound (bone exposed) | 28 | 1 | 3·6 | 3 | 2 | 1 |
| *c.* Concussion | 36 | . . | . . | 4 | 1 | |
| *d.* Simple fracture | 5 | 3 | 60 | | | |
| *e.* Compound fracture | 7 | 6 | 85·7 | . . | . . | 2 |
| *f.* Fracture of the base | 16 | 7 | 43·7 | 1 | | |
| *g.* Contusions | 20 | . . | . . | 3 | | |
| 2. Of the face: | | | | | | |
| *a.* Fracture of the lower jaw | 11 | . . | . . | 2 | | |
| *b.* „ bones of face | 4 | | | | | |
| *c.* Contusions of the face | 11 | . . | . . | 3 | | |
| *d.* Wounds of the face | 31 | . . | . . | 6 | 2 | |
| *e.* „ „ eyelid | 2 | | | | | |
| *f.* „ „ eyeball | 6 | | | | | |
| *g.* „ „ tongue | 1 | | | | | |
| 3. Of the back: | | | | | | |
| *a.* Fracture of the spine | 5 | 5 | 100 | | | |
| *b.* Sprains and contusions | 29 | . . | . . | 2 | | |
| *c.* Wounds | 4 | 1 | 25 | | | |
| *d.* Concussion | 1 | | | | | |
| 4. Of the neck: | | | | | | |
| *a.* Cut throats and wounds | 5 | 2 | 40 | 1 | | |
| *b.* Contusions and sprains | 3 | | | | | |
| *c.* Foreign body in pharynx | 1 | | | | | |
| 5. Of the chest: | | | | | | |
| *a.* Fractured rib | 19 | 2 | 10·5 | 3 | 4 | |
| *b.* Contusions | 32 | . . | . . | 4 | | |
| *c.* Wounds of the chest-wall | 2 | | | | | |
| *d.* Ruptured viscus | 1 | | | | | |
| 6. Of the abdomen: | | | | | | |
| *a.* Contusions | 10 | . . | . . | 1 | | |

| Nature of injury. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with other injury. | Complicated with disease. | Operations. |
|---|---|---|---|---|---|---|
| B. Local injuries—*continued.* | | | | | | |
| 6. Of the abdomen: | | | | | | |
| *b.* Injuries of the scrotum | 4 | | | | | |
| *c.* Injuries of the penis | 1 | | | | | |
| *d.* „ „ labium | 2 | | | | | |
| *e.* Wounds of the abdomen | 6 | | | | | |
| *f.* Ruptured viscus | 4 | 1 | 25 | | | |
| *g.* Fractured pelvis | 1 | | | | | |
| 7. Of the upper extremity: | | | | | | |
| *a.* Contusions | 15 | . . | . . | 6 | 2 | |
| *b.* Wounds: | | | | | | |
| α. Above shoulder | 2 | 1 | 50 | 1 | | |
| β. Of arm | 7 | 1 | . . | 2 | . . | 1 |
| γ. „ forearm | 5 | . . | . . | . . | . . | 1 |
| δ. „ hand | 15 | . . | . . | 2 | 2 | 2 |
| *c.* Fractures: | | | | | | |
| α. Of clavicle | 10 | . . | . . | 1 | 2 | |
| β. „ humerus | 6 | | | | | |
| γ. „ forearm | 8 | 1 | . . | 3 | . . | 1 |
| *d.* Compound fractures | 17 | 3 | . . | 1 | 7 | 9 |
| *e.* Dislocations: | | | | | | |
| α. Of the shoulder | 5 | . . | . . | 2 | 1 | 5 |
| β. „ elbow | 1 | . . | . . | 1 | | |
| *f.* Sprains: | | | | | | |
| α. Of the shoulder | 6 | | | | | |
| β. „ elbow | 1 | | | | | |
| γ. „ wrist | 4 | . . | . . | 2 | | |
| *g.* Gunshot wounds | 1 | . . | . . | 2 | | |
| 8. Of the lower extremity: | | | | | | |
| *a.* Contusions | 104 | 2 | 1·9 | 5 | 6 | 1 |
| *b.* Wounds: | | | | | | |
| α. Of the thigh | 13 | 1 | 7·7 | 3 | 4 | |
| β. „ leg | 22 | . . | . . | 2 | 2 | |
| γ. „ foot | 9 | . . | . . | 2 | | |
| *c.* Simple fractures: | | | | | | |
| α. Of the femur | 47 | 2 | 4·2 | 1 | | |
| β. „ cervix femoris | 3 | 1 | 33·3 | | | |
| γ. „ tibia | 3 | | | | | |
| δ. „ fibula | 14 | . . | . . | 1 | | |
| ε. „ patella | 6 | | | | | |
| ζ. „ leg | 74 | . . | . . | 1 | 1 | 1 |
| η. „ foot | 2 | 1 | 50 | . . | . . | 1 |
| *d.* Compound fractures | 25 | 10 | 4 | 1 | 9 | 6 |
| *e.* Comminuted fracture | 1 | 1 | 100 | . . | 1 | |
| *f.* Dislocations: | | | | | | |
| α. Of the knee | 1 | | | | | |
| β. „ semilunar cartilage | 1 | | | | | |
| γ. „ ankle | 1 | | | | | |
| *g.* Sprains: | | | | | | |
| α. Of the hip | 15 | 1 | 6·6 | | | |

| Nature of injury or disease. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with injury. | Complicated with other disease. | Operations. |
|---|---|---|---|---|---|---|
| B. Local injuries—*continued.* | | | | | | |
| 8. Of the lower extremity: | | | | | | |
| *g.* Sprains: | | | | | | |
| *β.* Of the knee | 34 | 1 | 2·9 | 1 | 1 | 1 |
| *γ.* „ ankle | 104 | .. | .. | 2 | 1 | |
| *h.* Gunshot wounds | 1 | 1 | 100 | .. | 1 | |
| C. Diseases (general): | | | | | | |
| *a.* Erysipelas (cutaneous) | 32 | .. | .. | 8 | 7 | 1 |
| *b.* „ (phlegmonous) | 11 | 1 | 9·1 | 2 | | |
| *c.* Gangrene: | | | | | | |
| *α.* Senile | 1 | | | | | |
| *β.* Hospital | 46 | 7 | 15·2 | 22 | 28 | 7 |
| *d.* Tetanus | 2 | 2 | 100 | 2 | .. | 1 |
| *e.* Pyæmia | 22 | 22 | 100 | 10 | 13 | 4 |
| D. Diseases (local): | | | | | | |
| 1. Diseases of the organs of motion: | | | | | | |
| *a.* Of bone: | | | | | | |
| *α.* Necrosis | 42 | .. | .. | .. | 9 | 5 |
| *β.* Caries | 30 | 3 | 10 | .. | 6 | 14 |
| *γ.* Disease of spine | 37 | 1 | 2·9 | .. | 3 | |
| *δ.* Lateral curvature | 5 | | | | | |
| *ε.* Tumours of bone | 3 | .. | .. | .. | .. | 2 |
| *ζ.* Rickets | 3 | | | | | |
| *η.* Periostitis | 10 | 1 | 10 | .. | 3 | |
| *b.* Of joints: | | | | | | |
| *α.* Synovitis | 37 | .. | .. | .. | 7 | |
| *β.* Ulceration of cartilages | 2 | | | | | |
| *γ.* Abscess in joint | 17 | 3 | 17·6 | .. | 5 | 7 |
| *δ.* Diseased ligaments | 1 | | | | | |
| *ε.* Hysterical joint | 5 | .. | .. | .. | 3 | |
| *ζ.* Rheumatism | 3 | .. | .. | .. | 3 | |
| *η.* Ankylosis | 19 | 1 | 5·26 | .. | 1 | 1 |
| *θ.* Morbus coxæ | 49 | 3 | 6·1 | 1 | 3 | 2 |
| *ι.* Loose cartilages | 2 | .. | .. | .. | .. | 1 |
| *c.* Of bursæ: | | | | | | |
| *α.* Inflamed bursa patellæ | 43 | .. | .. | .. | 2 | 1 |
| *β.* Other bursæ inflamed | 5 | .. | .. | .. | .. | 1 |
| *d.* Of muscles, tendons, and their sheaths: | | | | | | |
| *α.* Thecal abscess | 24 | 3 | 12·5 | .. | 5 | |
| *β.* Contracted tendons | 19 | .. | .. | .. | 3 | 3 |
| *γ.* Abscess in muscles | 3 | 1 | 33·3 | .. | 1 | |
| *δ.* Ganglion | 2 | | | | | |
| *ε.* Hydatid | 1 | | | | | |
| 2. Diseases of the organs of circulation: | | | | | | |
| *a.* Of the heart | 1 | 1 | 100 | .. | 1 | |
| *b.* Of the arteries: | | | | | | |
| *α.* Aneurism | 2 | 1 | 50 | .. | .. | 1 |
| *β.* Nævus | 2 | .. | .. | .. | .. | 1 |
| *c.* *α.* Varicose veins | 31 | .. | .. | .. | 14 | 20 |

| Nature of disease. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with injury. | Complicated with other disease. | Operations. |
|---|---|---|---|---|---|---|
| D. Diseases (local)—*continued.* | | | | | | |
| 2. Diseases of the organs of circulation: | | | | | | |
| β. Phlebitis | 5 | 1 | 20 | 2 | 1 | |
| δ. α. Inflamed absorbents | 13 | . . | . . | 1 | 5 | |
| β. Suppurating glands | 24 | 2 | 8·3 | 1 | 1 | 1 |
| γ. Tumours of glands | 2 | | | | | |
| 3. Diseases of the organs of respiration: | | | | | | |
| *a.* Disease of the larynx | 4 | | | | | |
| *b.* Bronchitis | 12 | 3 | 25 | 8 | 1 | |
| *c.* Phthisis | 4 | 2 | 50 | . . | 4 | |
| *d.* Pleurisy | 2 | 1 | 50 | . . | . . | 1 |
| *e.* Hooping-cough | 1 | . . | . . | . . | 1 | |
| 4. Diseases of the nervous system: | | | | | | |
| *a.* Of the brain: | | | | | | |
| α. Epilepsy | 2 | . . | . . | 1 | | |
| β. Delirium tremens | 6 | 2 | 33·3 | 5 | 1 | |
| γ. Hemiplegia | 2 | | | | | |
| δ. Other organic changes | 5 | | | | | |
| ε. Mania | 1 | . . | . . | . . | 1 | |
| *b.* Of the spinal cord: | | | | | | |
| α. Paralysis infantum | 1 | | | | | |
| β. Partial paralysis | 3 | . . | . . | . . | 2 | |
| γ. Sciatica | 1 | | | | | |
| δ. Neuralgia | 6 | . . | . . | . . | 1 | |
| 5. Diseases of the skin and its appendages: | | | | | | |
| *a.* Eruptions: | | | | | | |
| α. Eczema | 26 | . . | . . | . . | 1 | |
| β. Herpes | 1 | | | | | |
| γ. Impetigo | 1 | | | | | |
| δ. Rupia | 15 | 1 | 6·6 | . . | 4 | |
| ε. Psoriasis | 4 | | | | | |
| ζ. Lichen | 2 | . . | . . | . . | 2 | |
| η. Acne | 1 | . . | . . | . . | 1 | |
| θ. Lupus | 3 | 1 | 33·3 | . . | 1 | |
| ι. Purpura | 1 | | | | | |
| κ. Ecthyma | 2 | | | | | |
| λ. Scabies | 8 | | | | | |
| μ. Erythema | 1 | | | | | |
| ν. Ptyriasis | 1 | | | | | |
| ξ. Urticaria | 1 | . . | . . | 1 | | |
| *b.* Ulcer | 153 | 2 | 1·3 | 1 | 34 | 8 |
| *c.* Superficial abscess | 57 | 2 | 3·5 | 2 | | |
| *d.* Cancerous ulceration | 6 | 2 | 33·3 | . . | 1 | 3 |
| *e.* Tumours: | | | | | | |
| α. Fatty | 6 | . . | . . | . . | . . | 6 |
| β. Sebaceous | 6 | . . | . . | . . | . . | 6 |
| γ. Other encysted | 1 | | | | | |
| δ. Malignant | 3 | 1 | 33·3 | . . | 1 | 1 |

| Nature of disease. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with injury. | Complicated with other disease. | Operations. |
|---|---|---|---|---|---|---|
| D. Diseases (local)—*continued.* | | | | | | |
| 5. Diseases of the skin and its appendages: | | | | | | |
| *f.* Carbuncles | 4 | | | | | |
| *g.* Boils | 3 | | | | | |
| *h.* Œdema | 3 | | | | | |
| *i.* Ulcer of stump | 4 | 1 | 25 | | | 1 |
| *k.* Contracted cicatrix | 5 | | | | | 1 |
| *l.* Onychia | 8 | | | | 1 | 2 |
| *m.* Corns and bunions | 2 | | | | | |
| *n.* Elephantiasis | 1 | 1 | 100 | | | 1 |
| 6. Diseases of the eye, nose, and ear: | | | | | | |
| *a.* Of the eye: | | | | | | |
| α. Conjunctivitis | 17 | | | | 4 | |
| β. Corneitis | 9 | | | | | |
| γ. Sclerotitis | 1 | | | | | |
| δ. Iritis | 10 | | | | 2 | |
| ε. Choroiditis | 1 | | | | 1 | |
| ζ. Cataract | 10 | | | | | 8 |
| η. Amaurosis | 1 | | | | | |
| θ. Glaucoma | 1 | | | | | 1 |
| ι. Staphyloma | 5 | | | | | 4 |
| κ. Entropion | 1 | | | | 1 | |
| λ. Strabismus | 2 | | | | | 2 |
| *b.* Of the ear: | | | | | | |
| α. Polypus | 1 | | | | | 1 |
| *c.* Of the nose: | | | | | | |
| α. Polypus | 5 | | | | | 3 |
| β. Malignant disease | 1 | | | | | |
| 7. Diseases of the organs of digestion: | | | | | | |
| *a.* Of the mouth: | | | | | | |
| α. Abscess of mouth | 2 | 1 | 50 | | | |
| β. Ulceration of mucous membrane | 8 | 1 | 12·4 | | 2 | |
| γ. Sore-throat | 4 | | | | 3 | |
| δ. Quinsey | 2 | | | 1 | 1 | |
| ε. Fissured palate | 3 | | | | 1 | 2 |
| ζ. Epulis | 1 | | | | | 1 |
| η. Hare-lip | 5 | | | | | 4 |
| θ. Enlarged tonsils | | | | | | 1 |
| ι. Cancer of tongue | 1 | | | | | |
| *b.* Of the other organs of digestion: | | | | | | |
| α. Strangulated hernia | 20 | 6 | 30·0 | | 4 | 17 |
| β. Reducible | 10 | | | | | |
| γ. Irreducible | 9 | | | | | |
| δ. Peritonitis | 5 | 5 | 100 | | | |
| ε. Fæcal abscess | 1 | | | | | |
| ζ. Ulceration of rectum | 1 | | | | | |
| η. Fistula in ano | 19 | | | | | 10 |
| θ. Piles | 21 | | | | | 11 |

| Nature of disease. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with injury. | Complicated with other disease. | Operations. |
|---|---|---|---|---|---|---|
| D. Diseases (local)—*continued.* | | | | | | |
| 7. Diseases of the organs of digestion: | | | | | | |
| *b.* Of other organs of digestion: | | | | | | |
| *ι.* Stricture of rectum | 5 | . . | . . | . . | 1 | |
| *κ.* Prolapsus ani | 2 | | | | | |
| *λ.* Fissure of rectum | 2 | . . | . . | . . | . . | 2 |
| *μ.* Constipation | 2 | | | | | |
| *ν.* Cancer of rectum | 3 | 1 | 33·3 | . . | . . | 1 |
| 8. Diseases of the urinary organs: | | | | | | |
| *a.* Albuminuria | 2 | 2 | 100 | . . | . . | 1 |
| *b.* Of the bladder: | | | | | | |
| α. Irritable bladder | 7 | | | | | |
| β. Retention of urine | 5 | | | | | |
| γ. Stone in the bladder | 9 | 2 | 22·2 | | | |
| δ. Strumous disease | 1 | 1 | 100 | | | |
| *c.* Of the urethra: | | | | | | |
| α. Urethral fistula | 1 | . . | . . | . . | . . | 1 |
| β. Vascular tumour of the female urethra | 2 | . . | . . | . . | . . | 2 |
| γ. Stricture | 28 | 3 | 10·7 | . . | 3 | 2 |
| δ. Fistula in perineo | 14 | . . | . . | . . | . . | 1 |
| ε. Enlarged prostate | 9 | 1 | | | | |
| ζ. Effusion of urine | 2 | | | | | |
| η. Recto-urethral fistula | 1 | . . | . . | . . | . . | 1 |
| 9. Diseases of the male organs of generation: | | | | | | |
| *a.* Syphilis | 7 | . . | . . | . . | 1 | |
| *a'.* Secondary syphilis | 16 | . . | . . | . . | 13 | |
| *b.* Gonorrhœa | 5 | . . | . . | . . | 5 | |
| *c.* Phymosis | 3 | . . | . . | . . | . . | 1 |
| *d.* Paraphymosis | 5 | . . | . . | . . | . . | 3 |
| *e.* Bubo | 10 | | | | | |
| *f.* Hydrocele | 12 | . . | . . | . . | 1 | 12 |
| *g.* Hæmatocele | 1 | | | | | |
| *g'.* Varicocele | 1 | . . | . . | . . | . . | 1 |
| *h.* Acute orchitis | 8 | | | | | |
| *i.* Chronic orchitis | 6 | | | | | |
| *k.* Lacunar abscess | 2 | . . | . . | . . | 1 | |
| *l.* Malignant disease of testis | 1 | | | | | |
| *m.* Cancer of penis | 2 | . . | . . | . . | . . | 2 |
| 10. Diseases of the female organs of generation: | | | | | | |
| *a.* Of the breast: | | | | | | |
| α. Abscess | 3 | | | | | |
| β. Milk-abscess | 4 | | | | | |
| γ. Chronic mammary tumour | 2 | . . | . . | . . | 1 | 2 |
| δ. Scirrhus | 7 | 1 | 14·3 | . . | . . | 4 |
| *b.* Of the other organs: | | | | | | |
| α. Abscess of labium | 4 | . . | . . | . . | 1 | 1 |
| β. Malignant dis. of labium | 1 | . . | . . | . . | . . | 1 |

| Nature of disease. | Total number of admissions. | Total number of deaths. | Percentage of mortality. | Complicated with injury. | Complicated with other disease. | Operations. |
|---|---|---|---|---|---|---|
| D. Diseases (local)—*continued.* | | | | | | |
| 10. Diseases of the female organs of generation: | | | | | | |
| *b.* Of the other organs: | | | | | | |
| γ. Gonorrhœa | 6 | | | | | |
| δ. Condylomata | 1 | | | | | |
| ε. Syphilis | 6 | . . | . . | . . | 1 | |
| ε′. Secondary syphilis | 16 | 1 | 6·2 | . . | . . | 14 |
| ζ. Recto-vaginal fistula | 1 | | | | | |
| η. Vesico-vaginal fistula | 1 | . . | . . | . . | . . | 1 |
| θ. Leucorrhœa | 5 | 1 | . . | . . | . . | 1 |
| ι. Cancer of the uterus | 1 | | | | | |
| κ. Fibrous tumour | 1 | | | | | |
| λ. Polypus uteri | 3 | . . | . . | . . | . . | 2 |
| μ. Encysted tumour of labium | 1 | . | . . | . . | . . | 1 |
| ν. Ruptured perinæum | 1 | 1 | 100 | . . | 1 | 1 |
| ρ. Ovarian cyst | 3 | | | | | |
| ς. Hysteria | 14 | . . | . . | . . | 6 | |

EDMUND CUTHBERT RING,
*Surgical Registrar.*

END OF VOL. II.

# ST. GEORGE'S HOSPITAL

## Medical School.

*Session* 1867-68.

THE WINTER COURSE OF INSTRUCTION WILL COMMENCE ON TUESDAY, OCTOBER FIRST,

*With an Introductory Address by* MR. HOLMES *at* 2 P.M., *at the Hospital.*

**Consulting Physician.**
DR. PITMAN.

**Physicians.**
DR. PAGE; DR. FULLER; DR. BARCLAY; DR. JOHN W. OGLE.

**Assistant-Physicians.**
DR. WADHAM; DR. DICKINSON.

**Physician Accoucheur.**
DR. JOHN CLARKE.

**Consulting Surgeons.**
MR. CÆSAR HAWKINS, F.R.S.; MR. CUTLER.

**Surgeons.**
MR. TATUM; MR. PRESCOTT HEWETT; MR. POLLOCK; MR. HEN. LEE.

**Assistant-Surgeons.**
MR. HOLMES; MR. BRODHURST.

**Dentist.**
MR. VASEY.

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I.

Gentlemen may become PERPETUAL PUPILS by paying a compounding fee of One Hundred Guineas. Perpetual Pupils are entitled to admission to the practice of the Physicians and Surgeons, to all the Lectures (except Practical Chymistry), to compete for all Prizes and Exhibitions, to hold the appointments of House-Physician, House-

Surgeon, and Assistant House-Surgeon, and to become Clinical Clerks for two periods of three months each, and Dressers for two similar periods. This payment must in all cases be made at the time of entry.

II.

Gentlemen will be admitted to the Hospital Practice and Lectures required for the Licence of the Royal College of Physicians, for the Diploma of Member of the Royal College of Surgeons, and for the License of the Society of Apothecaries, with the exception of Practical Chymistry, on payment of the following fees, viz. Forty Guineas for the First Year of Study, Forty Guineas for the Second Year of Study, and Ten Guineas for each Succeeding Year. By payment of these fees, a Pupil is entitled to hold the offices of Clinical Clerk and Dresser for three months each, but not to become House-Physician or House-Surgeon, or to compete for the "William Brown Exhibition" and the "Clinical" Prizes. Pupils who have entered under this rule may at any time become Perpetual by making up their total payments to One Hundred and Ten Guineas.

III.

Gentlemen will be admitted to the Lectures and Hospital Practice required for the Diploma in Dental Surgery by one payment of Forty-five Pounds. This sum does not include Practical Chymistry.

IV.

Gentlemen may enter to the Hospital Practice and Lectures separately, on the following terms, viz.:

**Hospital Practice—Physicians.**

| | |
|---|---|
| For the Period required to qualify for Examination for the License of the Royal College of Physicians, for the Diploma of Member of the Royal College of Surgeons and the License of the Society of Apothecaries | Sixteen Guineas. |
| For Six Months | Eight Guineas. |
| For One Year | Sixteen Guineas. |
| Perpetual Pupils | Twenty-four Guineas. |

**Hospital Practice—Surgeons.**

| | |
|---|---|
| For the period required to qualify for Examination for the License of the Royal College of Physicians, and the Diploma of Member of the Royal College of Surgeons | Twenty Guineas. |
| For Six Months | Fifteen Guineas. |
| For One Year | Twenty Guineas. |
| For each additional Year | Ten Guineas. |
| Perpetual Pupils | Forty Guineas. |

Attendance of the Physicians and Surgeons daily at One o'clock. Surgical Operations on Thursdays at One o'clock.

## LECTURES.

| | One Course. £ | s. | d. | Perpetual. £ | s. | d. |
|---|---|---|---|---|---|---|
| **WINTER SESSION.** | | | | | | |
| Descriptive and Surgical Anatomy | 6 | 6 | 0 | 7 | 7 | 0 |
| Physiology and General Anatomy | 6 | 6 | 0 | 7 | 7 | 0 |
| Chymistry | 6 | 6 | 0 | 8 | 8 | 0 |
| Medicine | 6 | 6 | 0 | 7 | 7 | 0 |
| Surgery | 6 | 6 | 0 | 7 | 7 | 0 |
| Pathology and Morbid Anatomy | 5 | 5 | 0 | | | |
| **SUMMER SESSION.** | | | | | | |
| Materia Medica | 4 | 4 | 0 | 5 | 5 | 0 |
| Midwifery | 5 | 5 | 0 | 6 | 6 | 0 |
| Botany | 3 | 3 | 0 | 4 | 4 | 0 |
| Medical Jurisprudence | 4 | 4 | 0 | 5 | 5 | 0 |
| Practical Chymistry (including the use of apparatus and materials) | 4 | 4 | 0 | | | |

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**House Physician.** This Officer is appointed annually, on the recommendation of the Medical School Committee, from among the Physicians' Perpetual Pupils. He has charge of half the patients in the Medical Wards, in the absence of the Physicians, and pays Fifty Pounds to the Treasurers of the Hospital for Board and Residence.

**House Surgeons.** The appointment to these offices is made half-yearly, on the nomination of the Medical School Committee, from among the Surgeons' Perpetual Pupils. The Pupil selected for this appointment acts as Assistant House-Surgeon for a period of Six Months, before his admission to the office of House-Surgeon, which he is entitled to hold for Twelve Months, on payment of Fifty Pounds to the Treasurers of the Hospital for Board and Residence.

**Clinical Instruction.** The Pupils of the Hospital requiring Certificates of Attendance on Hospital Practice will be divided into Classes, under the superintendence of the Physicians and Surgeons in rotation. The gentlemen forming these classes will be placed in charge of the cases as Clinical Clerks and Dressers under the direction of the Medical Officer to whom they are attached.

**Ophthalmic Department.** Persons labouring under Diseases of the Eye are seen twice a week as Out-Patients, and two Wards are reserved for cases of greater severity. A Course of Lectures on Diseases of the Eye will be given, and the use of the ophthalmoscope demonstrated from the cases under treatment.

**Orthopædic Surgery.** The Course of Lectures on this subject will be illustrated by examples among the patients of the various classes of Deformities, and the methods employed for their relief.

**Skin Diseases.** Practical demonstrations from Patients labouring under these diseases will be given by the Lecturer on Medicine, in illustration of his course, when the students will be instructed in the means of diagnosis and the principles of treatment.

**A Maternity Department**, for the delivery of married lying-in women at their own homes, is established at the Hospital; and a Ward is devoted to the reception of women suffering under diseases peculiar to the sex, under the superintendence of the Obstetric Physician.

**Obstetric Assistant.** This officer is appointed annually by the Weekly Board and is eligible for re-appointment. He resides and boards in the Hospital, receives a yearly salary of One Hundred Pounds, and must be a legally qualified practitioner.

*Vaccination* will be performed every Thursday morning at ten o'clock, and instruction in Vaccination given by the Obstetric Assistant.

**Dental Surgery.** Mr. Vasey will deliver a Course of Lectures on Dental Surgery during the Summer Session. Fee to Pupils (not being Pupils of the Hospital), One Guinea.

The **Library** and **Reading-Room** are open during the greater part of the day. Every Pupil of the Hospital has to subscribe the sum of Ten Shillings and Sixpence to the Library at the commencement of each Winter Session.

The **Museum** is open daily to the Pupils of the Hospital.

**Curator.** A Curator of the Pathological Museum is appointed annually by the Weekly Board from among the Senior Pupils, on the recommendation of the Medical School Council, with a Salary of Fifty Pounds per annum. One of the Pupils is appointed by the Medical School Committee to assist the Curator in performing Post-Mortem Examinations.

**Registrars.** A Medical and a Surgical Registrar are appointed annually by the Weekly Board from among the Senior Pupils, on the recommendation of the Medical School Council, each with a Salary of Fifty Pounds per annum.

**Demonstrator of Anatomy.** A paid Demonstrator will be appointed annually by the School Committee on the recommendation of the Lecturer on Anatomy, from among the Senior Students. In this appointment regard will be specially had to his acquaintance with the subject, and the manner in which he has conducted himself in the dissecting-room. He will assist the Pupils in their anatomical studies, and superintend the dissecting-room in the absence of the Lecturer.

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## REGULATIONS RESPECTING STUDENTS.

THE ATTENTION OF STUDENTS IS PARTICULARLY CALLED TO THE FOLLOWING REGULATIONS.

1. The Physicians' Perpetual Pupils are alone eligible for the office of House-Physician.
2. The Surgeons' Perpetual Pupils are alone eligible for the office of House-Surgeon.

3. All Pupils of the Hospital may become Candidates for the several offices of Medical and Surgical Registrar, Obstetric Assistant, Curator of the Museum, and Demonstrator of Anatomy. They are also entitled to attendance on the Maternity Department, and the practice of Ophthalmic and Dental Surgery, without additional fee.
4. Certificates of attendance on Hospital Practice will not be signed for any Pupil who has not acted as Clinical Clerk and Dresser to the Physicians and Surgeons as may be from time to time required of him by the Dean of the Medical School.
5. Certificates of attendance on Lectures will not be signed for any Pupil who does not attend regularly and conduct himself with propriety.
6. At the beginning of every Session each Student must apply to Dr. BARCLAY, the Treasurer of the Medical School, or in his absence to Mr. HOLMES, the Dean of the School, for the Tickets required. The Tickets—before they can be registered—must be taken to the respective Lecturers for their signatures.
7. The Schedules, as soon as procured from the College and Hall, should be brought to Dr. BARCLAY, in order that they may be filled up in due course and signed by the respective Teachers. Students ought to apply to him for the certificates of their past Courses of Lectures before entering on a new Session.

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## Attendance of Physicians and Surgeons at the Hospital.

| | |
|---|---|
| Monday and Friday at 1 P.M. | Dr. PAGE and Dr. BARCLAY.<br>Mr. TATUM and Mr. HEWETT. |
| Tuesday and Saturday at 1 P.M. | Dr. FULLER and Dr. OGLE.<br>Mr. POLLOCK and Mr. HENRY LEE. |

*Out-Patients are seen on*

Monday and Friday at 12 P.M., by Dr. DICKINSON and Mr. HOLMES.
Tuesday and Saturday „ „ Dr. WADHAM and Mr. BRODHURST.
Eye Patients are seen as Out-Patients on Monday and Friday at 1 P.M.

### DENTIST.

Mr. VASEY attends at the Hospital on Tuesday and Saturday at 9 A.M., and on Thursday at 1 P.M.

DAYS AND HOURS OF ATTENDANCE ON LECTURES.

| WINTER SESSION. | | | | | | | | | | SUMMER SESSION. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Days. | Descriptive and surgical anatomy. | Physiology and general anatomy. | Chymistry. | Medicine. | Surgery. | Operations. | Clinical medicine. | Clinical surgery. | Pathology. | Days. | Midwifery. | Materia medica. | Dentistry. | Practical chymistry. | Clinical medicine. | Clinical surgery. | Pathology. | Medical Jurisprudence. | Botany. |
| Monday . | 3 | | | 9 | | | 2 | | | Monday . | 9 | 3 | | 10 | 2 | | | | |
| Tuesday . | | 3 | 11.30 | | 9 | | | 2 | | Tuesday . | | | 10 | | | 2 | | 9 | 3 |
| Wednesday | 3 | | | 9 | | | | | | Wednesday | 9 | 3 | | 10 | | | 2 | | |
| Thursday . | | 3 | 11.30 | | 9 | 1 | | | 3 | Thursday . | | | | 10 | | | | 9 | 3 |
| Friday . . | 3 | | | 9 | | | | | | Friday . . | 9 | 3 | | 10 | | | | | |
| Saturday . | | 10 | 11.30 | | 9 | | | | 3 | Saturday . | | | | | | | | 9 | 3 |

*** *Further information may be obtained from Dr. Barclay, the Treasurer of the School; from Mr. Holmes, the Dean of the School; and from any of the Lecturers, or Medical Officers of the Hospital.*

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## EXHIBITIONS AND PRIZES.

### "The William Brown Exhibition"

*Of Forty Pounds per Annum, tenable for Three Years.*

This Exhibition was founded by the Widow of William Brown, Esq., formerly a Pupil of St. George's Hospital, to be competed for by Perpetual Pupils, who have commenced their third but not completed their fourth Winter Session. It will be "bestowed on the Candidate who shall show the best general fitness for the exercise of the Medical Profession, and whose moral conduct shall in all respects be satisfactory."

### Sir Charles Clarke's Prize for Good Conduct.

Sir Charles Clarke, Bart., M.D., formerly a Pupil of St. George's Hospital, left the sum of 200*l.* Consols, the interest of which was to be awarded annually to the Student of the Hospital "who, by reason of his general good conduct during the preceding year, should be considered the most deserving."

*This Prize will be awarded by the Medical School Committee at the end of the Summer Session.*

### The Thompson Medal.

Mr. Sergeant Thompson, who was for many years Treasurer of St. George's Hospital, invested the sum of 100*l.* Three per Cent Stock, in the names of Trustees, for the purchase of a Silver Medal annually, to be awarded for the best Clinical Report of Medical and Surgical Cases,

observed in the Hospital during the preceding twelve months. The cases are to be accompanied by observations, and are not to exceed twenty in each department.

### Sir Benjamin Brodie's Clinical Prize in Surgery

Will be awarded to the Perpetual Pupil of the Hospital who shall have delivered to the Surgeons the best Report of not more than twenty Surgical cases which have occurred in the Hospital during the preceding twelve months, each case being accompanied with notes illustrative of its pathology, diagnosis, and treatment.

### The Acland Clinical Prize in Medicine.

Dr. Acland, of Oxford, has offered for competition a Prize to the Pupil of the Hospital who shall produce the best record of not more than twelve cases of disease treated in the preceding twelve months. The record to be illustrated by drawings and diagrams when possible, and accompanied by physiological and pathological remarks in explanation of the treatment.

*Competitors for the* THOMPSON MEDAL *and the* CLINICAL PRIZES *must send their Reports to the Secretary of the Medical School Committee on or before the 30th of June. The Reports must not have the name of the Candidate affixed, but must bear a motto on the outside, and be accompanied by a sealed envelope bearing the same motto, and containing his name and address.*

### The Henry Charles Johnson Memorial Prize in Anatomy

Will be awarded to that Pupil who shall, in the judgment of the Medical School Committee, exhibit the greatest proficiency in PRACTICAL ANATOMY.

*The Examination for this Prize will be held at the close of the Winter Session.*

### General Proficiency Prizes.

At the close of the Summer Session a General Examination of all the Pupils will be held, when a CERTIFICATE OF PROFICIENCY will be given to each one who passes to the satisfaction of the Examiners, and the following PRIZES awarded to the most distinguished, viz.

TO PUPILS IN THEIR FIRST YEAR, TEN GUINEAS.

*The subjects of Examination for the first year will be* Anatomy, Physiology, Chymistry, *and* Botany.

TO PUPILS IN THEIR SECOND YEAR, TEN GUINEAS.

*The subjects of Examination for the second year will be* Anatomy, Physiology, Chymistry, *and* Materia Medica.

TO PUPILS IN THEIR THIRD YEAR, TEN GUINEAS.

*The subjects of Examination for the third year will be* Principles and Practice of Medicine and Surgery, Pathology, *and* Midwifery.

*The names of those Students who pass the above Examinations will be published in alphabetical order, and the results of these Examinations and of those for the Clinical Prizes will be taken into account in appointing the House Physician and House Surgeons.*

## LECTURES.

*The Winter Session commences October* 1, *and terminates March* 31. *The Summer Session commences May* 1, *and terminates July* 31.

### Descriptive and Surgical Anatomy.

BY MR. ROUSE.

In these Lectures, the numerous parts and organs of which the Human Body consists are described with reference to their form and mutual relations, especially in their connexion with Surgery. Recent Dissections, Drawings, and Preparations are made use of for the purpose of illustration.

### Physiology, and General Anatomy.

BY DR. WILLIAM OGLE.

The structure and properties of the different tissues common to several organs are minutely described in this Course, as also the functions performed by those organs, either separately, or combined for a common purpose, and the laws which govern their actions.

These Lectures are illustrated by recent Dissections and Anatomical Preparations, and by Experiments and Diagrams.

### Practical Anatomy.

Demonstrator of Anatomy, Mr. Pick. Assistant Demonstrators, Mr. McConnell, and Mr. Christian. Demonstrator of Physiology, Mr. Bright. Demonstrations on Osteology will be given by Mr. Pick. Demonstrations in Histology and the Elementary facts of Physiology by Mr. Bright.

A Fee of Three Guineas is charged to each Student requiring a Certificate, in order to provide subjects for dissection and meet the other expenses connected with the Dissecting-room.

### Operative Surgery—Summer Session.

Pupils will have the opportunity to enter a Class under the superintendence of Mr. Rouse, who will assist and direct them in the performance of the various operations of Surgery.

Fee for the Course . . . . Four Guineas.

### Principles and Practice of Physic.

BY DR. BARCLAY.

A general view of Symptoms in their relation to Disordered Function, and to Altered Structure, is given in this Course of Lectures; and general facts and doctrines which have been ascertained and established are explained in so far as they serve as a basis for diagnosis or a guide in treatment. The Lectures will be illustrated so far as possible by specimens and preparations. The Diseases of the Skin will

be demonstrated on patients affected by them. A portion of the course will be devoted to the subject of public health and hygiene, as required by the College of Physicians.

## Psychological Medicine.

BY DR. BLANDFORD.

Twelve Lectures on Insanity will be given, consisting of an outline of Psychology, with a description of the rise and progress of Intellectual, Emotional, and Volitional Disorder; the Causation of Insanity, its Varieties, Pathology, and Treatment. An exposition will also be given of the law of Insanity, certificates of Lunacy, and evidence in Medico-legal cases.

Candidates for the membership of the College of Phyicians are now examined in this subject.

## Principles and Practice of Surgery.

BY MR. HOLMES.

These Lectures are intended to embrace an exposition of the principles on which the science of Surgery is founded, and also of the chief rules which govern its practice. Each Lecture will be illustrated by cases in the Hospital and preparations from the Museum. The Pupils attending these Lectures will be examined practically at short intervals in diagnosis on the living subject, and in bandaging and minor Surgery. Special courses will be given on the Diseases of the Eye by the Ophthalmic Surgeon, and on Orthopædic Surgery by Mr. Brodhurst. A course of demonstrations on the Laryngoscope will be given by Mr. Holmes.

## Pathology and Morbid Anatomy.

BY DR. JOHN W. OGLE.

The Course will include a general consideration of the nature of the various Morbid Actions set up in the Body; also the Morbid Anatomy of Organs and Tissues, and an inquiry into the condition of the Secretions under the influence of disease. The history of Tumours and Morbid Growths and the nature of the various Concretions and Degenerations which are met with will be considered, and the use of the Microscope and of Chymical Re-agents in the investigation and diagnosis of Disease will be explained and exemplified. The mode also of examining patients at the bedside, including the application of the Stethoscope and other instruments in the examination of Patients, and the proper manner of conducting Post-mortem Examinations, will be treated of.

The Course will be illustrated by drawings, diagrams, and model, and by specimens from the Pathological Museum; also by recent specimens from the Post-mortem Room, furnished by the Curator.

## Orthopædic Surgery.

BY MR. BRODHURST.

These Lectures will embrace a description of the various forms of Curvature of the Spine, Contractions and Ankylosis of Joints, Club-Foot, and Congenital Deformities. They will be illustrated by cases selected for that purpose, and demonstrations will be given of the various means and appliances, surgical and mechanical, which are employed in their treatment.

## Dental Surgery.

BY MR. VASEY.

A Course of Lectures on Dental Surgery will be given during the Summer Session.

## Chymistry.

BY HENRY M. NOAD, PH.D. F.R.S.

These Lectures will be divided into three Sections.

The *First* will be occupied with a full consideration of the fundamental doctrines of Chymistry.

In the *Second* division, the materials of the Inorganic world, and their most important combinations, will be examined.

The *Third* division will be devoted to the Chymistry of the *Vegetable* and *Animal* kingdoms.

## Practical Chymistry.

A commodious Laboratory has been arranged, and every requisite provided to carry into full effect the regulations of the Medical Corporations, requiring "a specific course of Instruction to be given in the Laboratory, with an opportunity of Personal Manipulation in the ordinary Processes of Chymistry, and of acquiring a knowledge of the various Re-agents for Poisons."

Fee for the use of Apparatus and Materials . . Four Guineas.

## Practical Pharmacy.

Gentlemen may be instructed in Pharmacy in the Laboratory and Dispensary of the Hospital.

## Midwifery and Diseases of Women and Children.

BY DR. JOHN CLARKE.

These Lectures comprehend, *First*, the Anatomy, Physiology, and Pathology of the unimpregnated Uterine System; *Secondly*, a description of the Gravid Uterus; *Thirdly*, the Symptoms and Treatment of all the Varieties of Parturition; *Fourthly*, the Diseases of Puerperal Women; and *Fifthly*, the Diseases of Infants. Numerous Drawings and Engravings, and an extensive Museum, are used to illustrate these Lectures.

Pupils have ample opportunities of learning Practical Midwifery, under the superintendence of the Obstetric Physician, by attendance on married women lying-in at their own homes.

A Course of Clinical Instruction on the Functional and Organic Diseases of Women will be given, exemplified by cases admitted into the Ward set apart for women suffering under ailments peculiar to the sex.

### Materia Medica.

BY DR. DICKINSON.

This Course embraces a consideration of all substances which are used as Medicines, arranged in Groups according to their action as Remedial Agents. Their Physical and Chymical characters are described; the mode of detecting their Adulterations illustrated by Experiments; the principal operations of Pharmacy explained; and a few Lectures are devoted to the Theory and Art of Prescribing. An extensive collection of Materia Medica is open for the use of the Students.

### Medical Jurisprudence.

BY DR. WADHAM.

The application of the Physiological, Medical, and Surgical Sciences to the elucidation of Legal Investigations, including Toxicology, is taught in these Lectures.

### Botany.

BY MAXWELL T. MASTERS, M.D. F.L.S.

This Course comprises the Anatomy and Physiology of the Vegetable Kingdom, including an explanation of the Natural and Artificial Systems of Classification. Fresh and dried Specimens of Plants, with numerous drawings, are used to illustrate these Lectures, and Herborising Excursions are made during the Session. Microscopical Demonstrations are frequently given in the course of the Session.

## PRIZES AND SCHOLARSHIPS.

*List of Students of St. George's Hospital who have distinguished themselves in the Annual Examinations.*

AMESBURY, —.
1847-8.

ANDREWS, HEN. CHAS., London.
1852-3; and 1853-4.

ANNESLEY, J. C., Bengal Army.
1851-2; and 1852-3.

ANDERSON, R.
1863-4.

ANDERSON, W. J.
1844-5; and 1845-6.

ARDEN, H. A., Woodchester.
1840-1.

ARCHER, H. RAY, London.
1863-4.

ASH, W.
1856-7.

BABER, J., London.
1841-2.

BALY, J. S., Kentish Town.
1839-40.

BANISTER, G., Bengal Army.
1839-40.

BARNES, R., London.*
1840-1; and 1841-2.

BARRATT, J. G., London.
1839-40.

BARRETT, H.
1863-4.

BARTON, F. E., Dover.
1843-4; and 1844-5.

BATTEN, E. B.
1843-4; 1844-5; and 1845-6.

BELLAMY, GEORGE, R.N.
1854-5; and 1855-6.

BELLEW, H. W., Bengal Army.
1851-2; 1852-3; and 1853-4.

BELLEW, P. F., Bengal Army.
1851-2; and 1852-3.

BEVISS, CHARLES, Leeds.
1860-1; and 1862-3.

BISSHOPP, H., Haslemere.
1837-8.

BLAGDEN, J. A., Petworth.
1838-9.

BLAGDEN, R., Stroud.
1846-7.

BOLTON, R. T.
1849-50; and 1850-1.

BOWLES, R. L., Folkestone.
1853-4; 1854-5; 1855-6; and 1856-7.

BRAYBROOKE, W.
1840-1.

BRETT, F. C.
1864-5; and 1865-6.

BRIGHT, J. A.
1856-7; and 1857-8.

BROWN, J. B. S.
1844-5.

BUCKLE, H. B., Bengal Army.
1837-8.

BUDD, JAMES.
1842-3; and 1844-5.

BULLOCK, E., London.
1839-40; and 1840-1.

BULTEEL, CHRISTOPHER, Plymouth.
1851-2; and 1852-3.

CAMPBELL, J.
1837-8.

CANT, W. E.
1863-4; and 1864-5.

CARTER, H. V., Bombay Army.
1848-9; 1849-50; and 1850-1.

CHAMBERS, T. K., M.D. Oxon.†
1839-40.

CHORLEY, W. F., London.
1838-9.

CLAPP, PRIDEAUX, R.N.
1860-1.

CLARKE, JOHN, London.‡
1842-3; and 1843-4.

CLARKE, T., Banbury.
1841-2.

COE, R. W., Bristol.§
1843-4.

COLLINS, J. C.
1843-4.

COLLISON, J. B., Bengal Army.
1852-3.

COLLYER, JAS., Minster.
1855-6; and 1856-7.

COOPER, G. F.
1855-6; and 1856-7.

COPESTAKE, T. G., Brailsford.
1846-7.

COPESTAKE, WALTER G., Derby.
1855-6.

CORNISH, W. R., Madras Army.
1850-1; 1851-2; and 1853-4.

* Lecturer on Midwifery at St. Thomas's Hospital, and Obstetric Physician to the London Hospital.
† Formerly Physician to St. Mary's Hospital.
‡ Physician-Accoucheur to St. George's Hospital.
§ Surgeon to General Hospital.

COTTON, G. P.
1858-9.

COTTON, R. P., London.*
1837-8; 1838-9; and 1840-1.

COURTNEY, SYDNEY, Bengal Army.
1853-4.

COX, W. A.
1865-6.

CUNDY, OSBERT, London.
1837-8; and 1838-9.

DAY, FRANCIS, Madras Army.
1849-50; and 1850-1.

DAY, R. T.
1837-8.

DICKEN, PERRY, Ashby de la Zouch.
1837-8.

DICKINSON, W. H., M.D. Cantab.†
1851-2; 1852-3; and 1853-4.

DIXIE, W. F., Lutterworth.
1846-7.

DIXON, HENRY.
1847-8; and 1848-9.

DRIVER, G. V., London.
1842-3.

DRUITT, WM., Wimbourne.
1839-40; and 1840-1.

DUDFIELD, T. ORME, Kensington.
1858-9; 1859-60; and 1860-61.

DUKA, THEODORE, Bengal Army.
1851-2; and 1852-3.

DUKE, F. W.
1851-2.

DUNCAN, THOMAS, Richmond.
1851-2; and 1852-3.

EARLE, GEORGE, Newbegin.
1849-50.

EARLE, JOSEPH, Brentwood.
1848-9; and 1849-50.

EATON, JAMES, Grantham.
1856-7; and 1857-8.

EBSWORTH, A., London.
1842-3.

EDGELOW, T., London.
1862-3; and 1863-4.

EVANS, O. S.
1848-9.

EWENS, JOHN, Milton Abbas.
1848-9; and 1849-50.

FIELD, A. G., Brighton.‡
1840-1; and 1841-2.

FINCHAM, G. T., London.§
1839-40.

FIRTH, W., H.M.S.
1850-1.

FLETCHER, G. F.
1842-3; and 1843-4.

FOLKARD, H., Bayswater.
1848-9.

FOSTER, J. F., H.M.S.
1863-4.

FOX, C. H., Bristol.
1856-7.

FOX, E. L., Bristol.
1856-7.

FREEBORN, R. F., Oxford.
1843-4.

FULLER, H. W., M.D. Cantab.¶
1841-2.

FULLER, W., London.
1844-5; and 1846-7.

GARLAND, E. C., Yeovil.
1852-3.

GEORGE, J.
1842-3; 1843-4; and 1844-5.

GILLOW, W., Torquay.
1843-4; and 1844-5.

GOODCHILD, F., Warwick.
1847-8.

* Physician to Hospital for Diseases of Chest, Brompton.
† Assistant-Physician to St. George's Hospital, and to the Hospital for Sick Children.
‡ Surgeon to St. Mary's Hospital, Brighton.
§ Physician to Westminster Hospital. ¶ Physician to St. George's Hospital.

GOLDSMITH, G. P., Bedford.
1856-7.

GRIFFIN, —.
1841-2.

GRIFFITHS, S. H.
1839-40; 1840-41; and 1841-2.

GUAZZARONI, J. B.
1843-4; and 1844-5.

GUNDRY, J. S., Honiton.
1846-7.

HALDENBY, W., Reedness.
1841-2.

HALSE, C., London.
1851-2.

HARDING, EDWARD.
1854-5; 1855-6; and 1856-7.

HARRISON, W., Skipton.
1850-1.

HARRISON, G., London.
1856-7.

HART, A. D., London.
1855-6.

HASTINGS, C.
1847-8.

HAWARD, J. W., London.
1862-3.

HENERY, ED. T.
1839-40.

HETT, H. N., Brigg, Lincolnshire.
1855-6; and 1856-7.

HICKS, R., Baldock.
1845-6.

HIGHMORE, W., Sherborne.
1837-8.

HILBRIS, W.
1838-9.

HOLL, H. B.
1845-6; and 1846-7.

HOLLOWAY, J., H.M.S.
1844-5; and 1845-6.

HOLROYD, W. S.
1865-6.

HOOPER, J. H.
1853-4.

HOPE, WILLIAM.
1860-1.

HOPKINS, G. H., Stone.
1842-3.

HORNIDGE, T. K., London.
1847-8; 1848-9; and 1849-50.

HOWSE, A.
1845-6; 1847-8; and 1848-9.

HUTCHINSON, T. C.
1837-8.

HUTTON, C., L.R.C.P., London.*
1837-8.

HUNT, ALFRED, Hammersmith.
1852-3.

HUNTER, G. Y., Madras Army.
1850-1; and 1852-3.

HUNTER, CHAS., London.
1853-4; 1854-5; 1855-6; and 1857-60.

ILES, F. H. W., Watford.
1852-3.

I'ANSON, T. F., Whitehaven.
1844-5; and 1845-6.

JACKSON, F. W.
1865-6.

JACKSON, E.
1865-6.

JANE, W., Newton Abbott.
1850-1.

JARVIS, R. F.
1840-1; 1841-2; and 1842-3.

JECKELL, P. B.
1850-1.

JOHNSON, ATHOL, Brighton.
1840-1.

JOHNSON, EDM., London.
1839-40.

JONES, C. H., M.B. Cantab.†
1840-1.

JONES, H. B., M.D. Cantab.‡
1837-8; and 1838-9.

* Physician-Accoucheur, General Lying-in Hospital.
† Physician to St. Mary's Hospital.
‡ Formerly Physician to St. George's Hospital.

KEENE, J., Hammersmith.
1852-3; and 1853-4.

KENYON, G. A.
1864-5.

KENYON, J. E.
1864-5.

KERR, J.
1847-8.

KING, GEORGE, Calne.
1846-7.

KINGSLEY, G. H.
1841-2; and 1842-3.

KITTOE, K.
1838-9.

KNIGHT, A. P., R.A.
1852-3; and 1853-4.

LAKING, F. H.
1864-5; and 1865-6.

LANDON, H.
1845-6.

LANGHORN, JOSEPH, London.
1860-61.

LEE, H., London.*
1837-8.

LEE, FRED. F., Salisbury.
1859-60.

LEIGH, W., London.
1863-4.

LEWIS, H., Rickmansworth.
1852-3; 1853-4; 1854-5; and 1855-6.

LICHFIELD, W.
1848-9; and 1849-50.

LLOYD, A.
1838-9; and 1839-40.

LLOYD, J.
1845-6.

LLOYD, N. H., Truro.
1860-1.

LOMAX, W. J., Lincoln.
1839-40.

LOVEGROVE, T. H.
1864-5.

MCCONNELL, J. F.
1865-6.

MACKAY, A. D.
1852-3.

MAGRATH, M., R.N.
1855-6.

MALTON, C.
1844-5.

MANNING, FREDERICK N., R.N.
1857-8; 1858-9; and 1859-60.

MARLEY, R., Broomyard.
1844-5.

MARSHALL, E. J.
1852-3; and 1853-4.

MARTIN, E., Weston-super-Mare.
1843-4.

MAYNE, T. H.
1846-7.

MERRIMAN, J. J., Kensington.
1847-8.

MITCHELL, JAS. I., Bath.
1843-4.

MORGAN, JOHN, London.
1839-40; and 1840-1.

MORRIS, C. J., Edmonton.
1848-9.

MOSELY, A., London.
1856-7.

NAYLER, G., London.
1850-1; and 1851-2.

NICHOLAS, E., London.
1855-6.

NICHOLLS, J., Wiveliscombe.
1851-2.

NORMAN, GEORGE.
1865-6.

NOURSE, W. E. C., Brighton.
1839-40; and 1840-1.

OGLE, JOHN W., M.D. Oxon.†
1847-8.

PAGE, W. IRVING.
1859-60.

* Surgeon to St. George's Hospital.

† Physician to St. George's Hospital.

PARKER, J. H., Whitchurch.
1846-7; and 1848-9.

PARNELL, L., London.
1844-5; 1845-6; 1846-7; and 1847-8.

PARRY, H. H., Allington.
1855-6; and 1856-7.

PENNY, J., Madras Army.
1850-1; 1851-2; and 1852-3.

PHILIPE, E. H.
1843-4.

POCOCK, W., London.
1838-9; and 1839-40.

PODE, C. C.
1864-5; and 1865-6.

POLLOCK, GEORGE D.*
1837-8; and 1839-40.

POLLOCK, H.
1849-50.

POMERY, J. R.
1851-2.

POPE, T. R., Hastings.
1840-1.

PRYTHERCH, J. D., H.M.S.
1853-4.

RICHARDSON, H. W. H.
1838-9.

RING, E. C.
1864-5; and 1865-6.

ROBERTS, C., Dunster.
1852-3; and 1853-4.

ROBERTS, CHAS., York Dispensary.
1856-7; and 1857-8.

ROBERTS, W. P., London.
1844-5; 1845-6; and 1846-7.

ROGERS, G. G., London.
1852-3.

ROGERS, GEORGE L.
1856-7.

ROSS, J. T. C., Bengal Army.
1843-4.

ROUSE, JAMES, London.†
1846-7; and 1848-9.

ROYSTON, C., London.
1849-50; 1850-1; and 1851-2.

SANDON, J. H. B.
1842-3; and 1845-6.

SEATON, DANIEL, Oakham.
1858.

SIMS, FRANCIS M. B.
1863-4; and 1865-6.

SMITH, R. J.
1837-8.

SMITH, T. H., London.
1842-3; 1843-4; and 1844-5.

SMITH, HEYWOOD, M.A., S.M. Oxon.
1862-3; and 1864-5.

SOLTAU, W. F.
1837-8.

SPACKMAN, W., Wolverhampton.
1841-2; and 1842-3.

SPITTA, R. J., Clapham.
1837-8; 1838-9; and 1839-40.

STEVENS, W. B., R.N., Plymouth.
1848-9; 1849-50; and 1850-1.

STRONG, H. J., Croydon.
1852-3.

SUTTON, WM., Dover.
1853-4; 1854-5; and 1855-6.

SYMES, J. G., Dorchester.
1845-6.

TATE, F. S., Louth.
1841-2.

TAYLOR, JOHN, Bayswater.
1837-8.

TEGART, ED., London.
1841-2; and 1842-3.

TEPPER, JOHN, London.
1860-1; and 1861-2.

THOMPSON, W., London.
1846-7.

TINDALL, W. R.
1863-4; and 1864-5.

* Surgeon to St. George's Hospital.
† Lecturer on Anatomy, St. George's Hospital; Assistant-Surgeon to the Ophthalmic Hospital.

TOMLINSON, G. D., H.M.S.
1856-7.

TRIMNELL, G. F.
1845-6.

UNDERHILL, F. W., Tipton.
1863-4; and 1864-5.

UWINS, H.
1840-1.

VENNING, EDGCOMBE, 1st Life Guards.
1855-6; and 1857-8.

WADHAM, W., M.D., London.*
1844-5.

WALFORD, W. G., Hertford.
1859-60.

WALKER, EDWARD, H.M.S.
1855-6; and 1856-7.

WASBROUGH, R., M.D., Westbury.
1837-8.

WATKINS, R. W., Towcester.
1841-2.

WATSON, G. S.
1862-3; 1863-4; and 1864-5.

WELLS, EDWARD, M.D. Oxon., Reading.†
1838-9; and 1839-40.

WHITE, ARTHUR, London.
1839-40.

WILLIAMS, W. J.
1849-50; 1850-1; and 1851-2.

WILLIS, J. H., Lewdown, Devon.
1851-2; and 1852-3.

WOODCOCK, E. W.
1842-3.

WOOLFEYS, I. A.
1844-5.

WOOLMER, S. E., London.
1853-4.

WYNDOWE, S. J., Madras Army.
1850-1.

WYNTER, H. B.
1857-8.

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*Names of Students who gained Prizes and Scholarships during the Session*, 1867-68.

**Sir Charles Clarke's Prize for general Good Conduct.**

Mr. BRETT.

**Sir B. Brodie's Prize for Clinical Surgery.**

Mr. J. H. P. WILSON.

**The H. C. Johnson Memorial Prize for Practical Anatomy.**

Mr. CHRISTIAN.

Honorary certificates: Mr. HOLROYD, „ LAKE.

**General Proficiency Prizes.**

*First year.*

Prize . . . Mr. BARNES.

Certificates of having passed to the satisfaction of the Examiners: Mr. BYAM, „ NORTH, „ PALMER, „ PARKER, „ PRIGG, „ VASEY.

* Assistant-Physician to St. George's Hospital.
† Physician Royal Berkshire Hospital.

**General Proficiency Prizes—*continued.***

*Second year.*

| | |
|---|---|
| Prize . . | Mr. HOLROYD. |
| Honorary certificates: | Mr. CHRISTIAN,<br>„ NORMAN. |

*Third year.*

| | |
|---|---|
| Prize . . | Mr. LAKING. |
| Honorary certificates: | Mr. BRETT,<br>„ LOVEGROVE. |
| Certificates of having passed to the satisfaction of the Examiners: | Mr. JACKSON,<br>„ MCCONNELL,<br>„ STEVENS. |

THE END.

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